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COMPUTERWORLD

NOVEMBER 3, 2008
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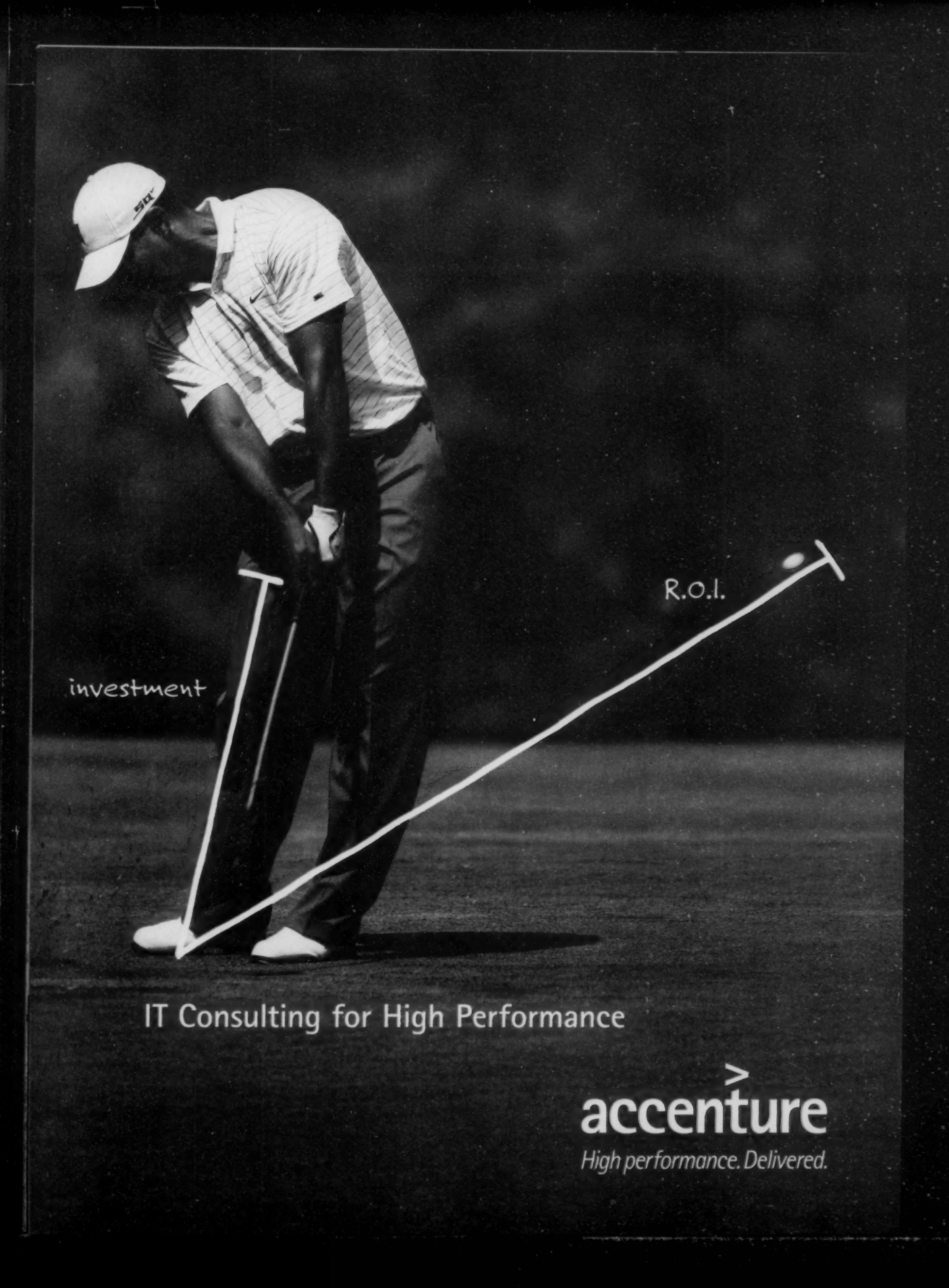
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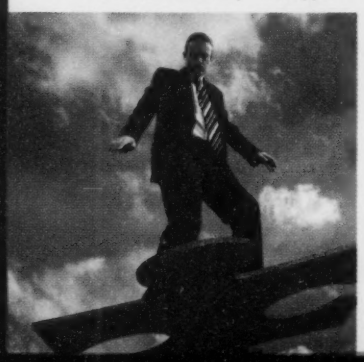

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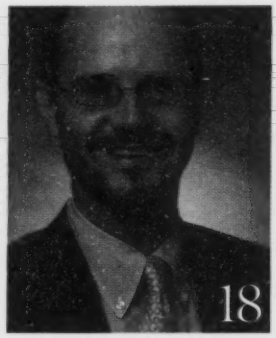

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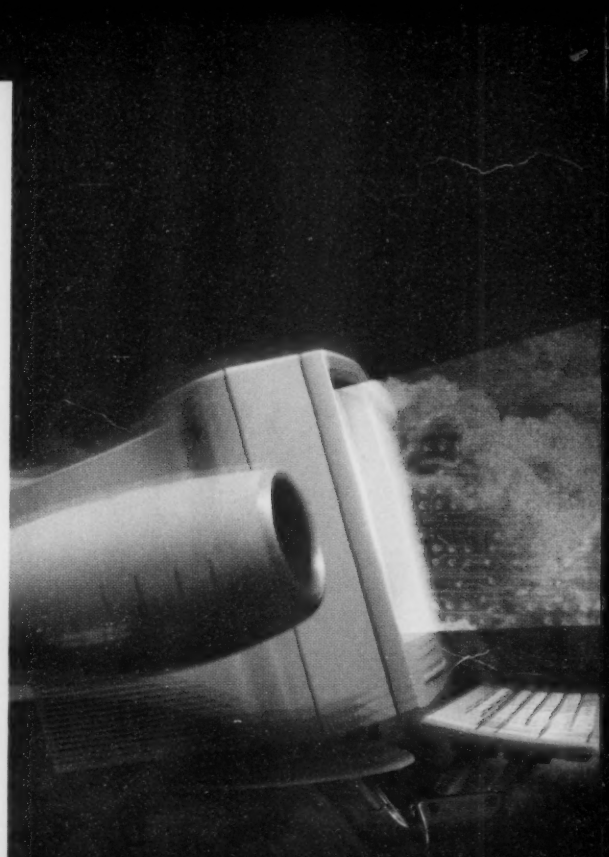

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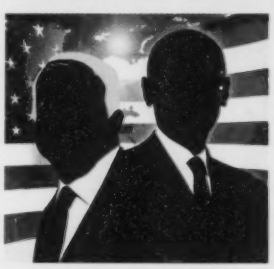

30 Dear Mr. President

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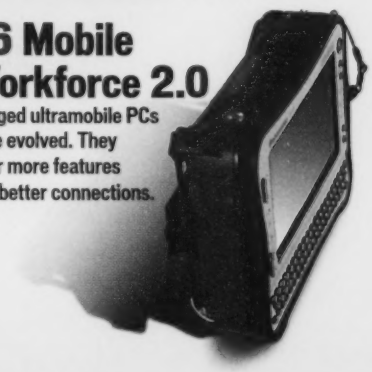
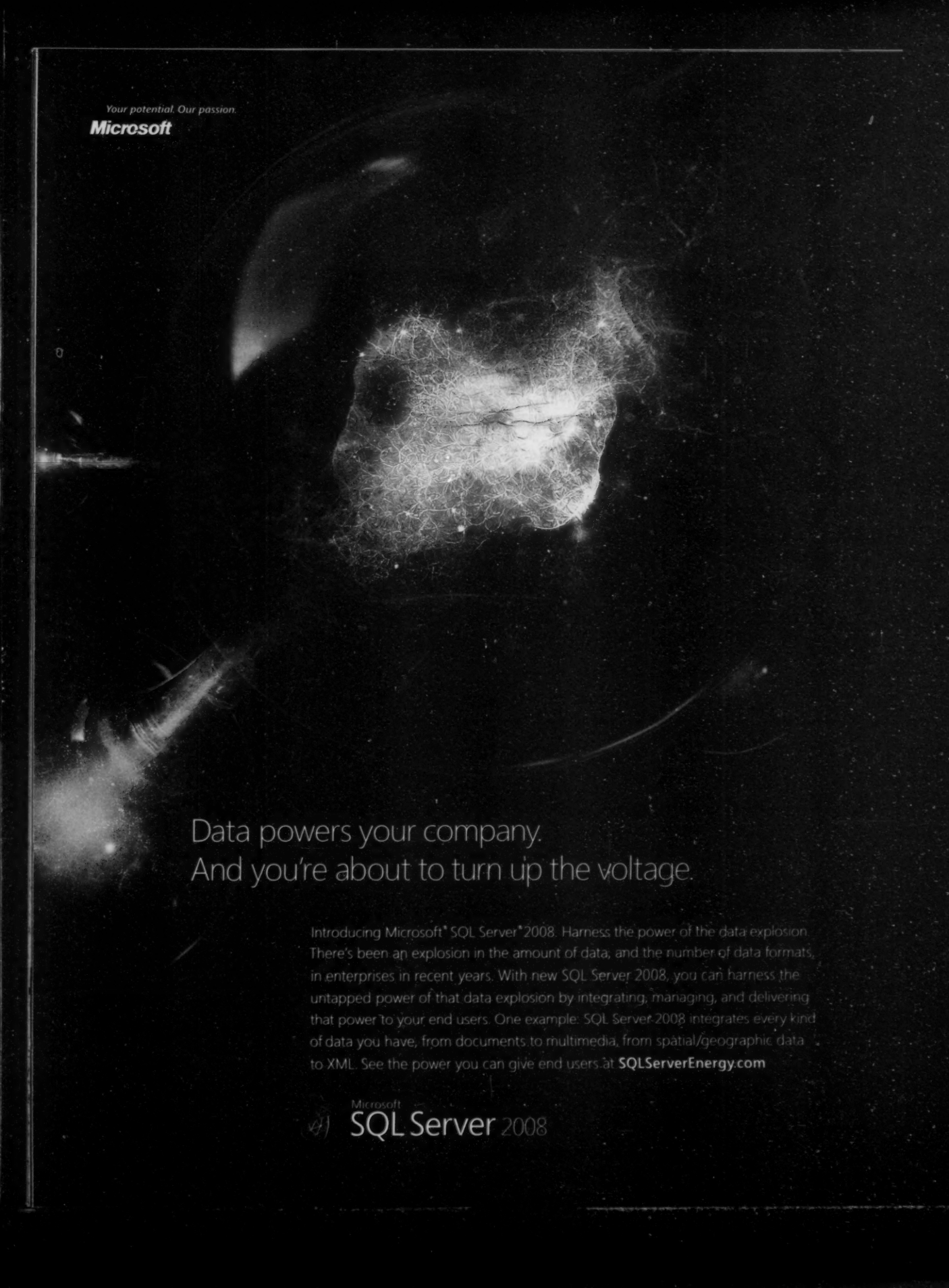
Rugged ultramobile PCs have evolved. They offer more features and better connections.

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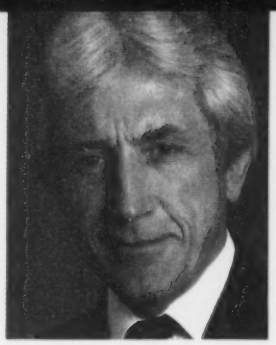
■ EDITOR'S NOTE

Don Tennant

What, Me Worry?



I'M CERTAINLY not one to seek the spotlight, but perhaps you'd be interested in knowing what Jerry Seinfeld, Ellen DeGeneres, Dane Cook, Tracy Morgan, Joan Rivers and I have in common. Besides the fact that we're all incredibly funny, talented, entertaining people, I mean.

If you must know, the answer is that by the end of this month, we all will have been recent headliners at Caesars Palace in Las Vegas. I know — pretty impressive stuff. The only difference is that while those other guys will have appeared in the part of the venue they call the Colosseum, I headlined on a makeshift stage in a nondescript room in the hotel's conference center. But I see no reason to get bogged down in details.

I'm proud to say I was the keynote speaker at last month's annual conference of IT executives from the property and casualty insurance industry, the event widely known as the PCI Information Technology Conference. Don't laugh. It's a big deal.

I spoke about the miracles that have occurred in the IT realm over the course of the 18 years I've been a journalist, and when I was finished, I said I'd be happy to take a few questions.

"What's the next miracle?" asked an earnest audience member who apparently assumed that I have far more insight than I really do. I could tell I had the same look on my face that Sarah Palin had on hers when Charles Gibson asked her about the Bush Doctrine.

"I have no idea," I finally said. "It's whatever you guys in this profession do that we end up reporting on." If there were any groans, they weren't audible, so I moved on.

The next questioner appeared to be looking for some balance to the shamelessly upbeat thrust of my presentation. "What do you really worry about?" he asked.

It was an intriguing question. Even though I'm not a worrier by nature, there was no awkward pause this time. I knew exactly what worried me about the people gathered in that room.

■ I'm worried that you don't realize that five years from now, the IT profession as you know it will no longer exist.

"I worry that you guys don't recognize how fast this profession is changing," I said. "I'm worried that you don't realize that five years from now, the IT profession as you know it will no longer exist, and that you're not doing enough to prepare yourselves for that."

I went on to explain that I wasn't referring to the tired "IT doesn't matter" or "IT is dead" rant. What I meant was that in 2014, IT will no longer exist as the stand-alone sphere of activity it tends to be today. What I didn't want was for anyone in that room to find himself five years from now looking back and thinking, "If only I'd known."

That is, "If only I'd known that by now IT would no longer exist as a distinct discipline in the sense that finance and marketing and sales are distinct disciplines." Unquestionably, in 2014 there will still be people whose expertise lies chiefly in the information systems that support the business. But they will be fully integrated into finance and marketing and sales and all the other departments in an enterprise.

I'm not for a heartbeat claiming that I'm spouting anything new here. Last year, for example, Forrester Research was already telling its clients that "over the next five years business will become so deeply embodied in technology, and the technology so deeply embedded in the business, that IT will need to be managed quite differently."

Forrester calls this new state — which it said is emerging from and being built on what's now known as IT — "business technology." BT, it explained, is "pervasive technology use that boosts business results."

So no, it's nothing new. But I wonder how many IT professionals are really taking all this seriously and are adjusting their career paths and their companies' organizational structures accordingly. This isn't one of those things that can be laughed off. There's just nothing funny or entertaining about obsolescence. ■

Don Tennant *is editorial director of* Computerworld *and* InfoWorld. *Contact him at don_tennant@computerworld.com, and visit his blog at* http://blogs.computerworld.com/tennant.

True Happiness and Asperger's Syndrome

In Don Tennant's three Editor's Notes about Asperger's syndrome, he asserts that happiness would be better achieved by looking outward instead of inward. This assertion seems to have the backing of science — specifically neurogenesis. Elizabeth Gould, a professor of psychology at Princeton, has found that various primates regenerate brain cells (previously thought impossible), but only if they are not caged in a dull, sterile environment. They have to be in a stimulating environment. I think there is a correlation between generating new brain cells and happiness; otherwise, we just lose them and begin to decay mentally. I would also think outward-looking activities like interacting with other people are probably more stimulating than being alone.

■ **Bob Dombroski,** *principal consultant, Sanofi-Aventis, Malvern, Pa.*

In his Oct. 6 Editor's Note, "Asperger's Oxymoron," Tennant states, "A fundamental prerequisite to doing something important with your life and making the world a better place is forming bonds and building relationships with other people." I subscribe to the theory that we are all unique and thus we all are not necessarily required to have these bonds. After a lot of years, I have concluded that I am a loner. I have tried to form bonds and been moderately successful, but basically, I am happiest when I am alone. I read a lot, listen to music and go see movies. I am excellent at my job, problem-solving, and I really enjoy what I do. I have been in IT since 1976 and always enjoy learning something new.

I believe I have made the world a better place, in spite of my preference for solitude, through the solutions I have developed. Everyone I come into contact with appreciates my value as a problem-solver and a facilitator. I currently am an administrator for a couple of applications, and I work well with users. After work, however, I do not like to socialize with my co-workers. I do it when I can limit the time, and since the location is usually far from where I live, I have a handy excuse.

■ **Roella Davis,** *senior systems analyst, Illinois*

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The 10 Best Features in Windows 7 for IT Pros

OPINION: New troubleshooting, security and federated search functions promise to make Windows life easier for both IT and end users alike, says Jonathan Hassell.

Too Old for Tech? Not These Silicon Valley CEOs

Despite Silicon Valley's infatuation with youth, a few savvy CEOs have stayed in the game into their 60s – to the great benefit of the companies they lead. They could teach the rest of us a thing or two.

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News Digest

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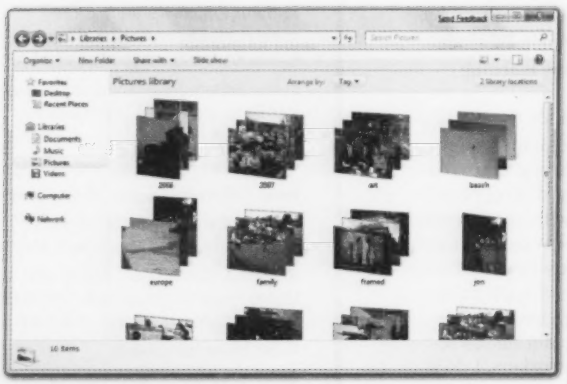
THE WEEK AHEAD

MONDAY: SaaS vendor Salesforce.com begins its annual user conference in San Francisco.

TUESDAY: E-voting systems will again be put to the test as voters cast their ballots in the presidential election.

WEDNESDAY: Microsoft's Windows Hardware Engineering Conference opens in Los Angeles (see related story below).

WEDNESDAY: Cisco plans to report its Q1 financial results.



« Windows 7's Libraries tool will aggregate similar files for users.

OPERATING SYSTEMS

Microsoft: Windows 7 Will Fix, Avoid Vista Mistakes

MICROSOFT Corp. last week publicly demonstrated Windows 7 for the first time, and company executives said that the planned operating system upgrade will reflect lessons learned from the rollout of Windows Vista.

In a speech at Microsoft's Professional Developers Conference in Los Angeles, Windows development chief Steven Sinofsky said that some of the criticism targeted at the vendor over Vista was deserved.

Sinofsky acknowledged that Microsoft hadn't fully prepared its business partners for Vista's release, which resulted in incompatible applications and a lack of hardware drivers. It won't repeat that mistake with Windows 7, he said.

Microsoft also plans to modify its User Account Control security feature in Windows 7 so the tool is less disruptive than it is in Vista. Sinofsky said the company "went a little too far with UAC" in Vista, which can hit even authorized users with frequent pop-up windows containing security prompts and notices.

In an interview, Mike Nash, corporate vice president of Windows product management, said that Microsoft also won't make major changes to Windows 7 late in the development cycle, as it did with Vista.

"We're very disciplined this time," Nash said. In fact, a so-called pre-beta build of Windows 7 that was given to PDC attendees and will be handed out at this week's Windows Hardware Engineering Conference "is a feature-complete version" of the operating system, he said.

Windows 7 will include new features such as a touch-screen interface and a tool called Libraries that's designed to offer a streamlined view of files and folders.

But in an effort to avoid Vista-like bloat, most of the planned improvements are refinements of features in that operating system. And Microsoft is removing some bundled applications and making them optional downloads, although Nash said that Windows 7 won't be any slimmer than Vista is from a megabyte standpoint.

Public beta-testing of Windows 7 is due to start early next year, and the OS could be released to business users in late 2009.

Asked if he expects users to put off Vista upgrades and wait for Windows 7, Nash said Microsoft made "a lot of measurable progress" in Vista Service Pack 1. But, he added, "customers are going to make their own decisions."

— Eric Lai, with Elizabeth Montalbano of the IDG News Service

STORAGE

NetApp Says Economic Woes Killed User Confab

NETAPP INC. blamed the worsening economy for its decision to cancel its first-ever user conference, which was scheduled to take place in San Francisco in February.

Elisa Steele, NetApp's senior vice president of corporate marketing, said in a statement that interest in the conference was strong but that many potential attendees couldn't commit to the event because of cuts in travel budgets.

The storage vendor plans to distribute technical content associated with the canceled conference early next year. It said registered attendees will get refunds for any deposits they made.

NetApp had expected to attract more than 3,000 people to the event.

– NANCY GOHRING, IDG NEWS SERVICE

Customers told us their travel budgets were being cut, and it was difficult to commit to attending in today's climate of economic uncertainty.

SENIOR VICE PRESIDENT OF CORPORATE MARKETING, NETAPP INC.

SOFTWARE

Overstock's ERP Woes Force It to Restate Results

CITING problems with an Oracle ERP implementation, Internet retailer Overstock.com Inc. last week announced that it is restating its financial results for a five-and-a-half-year period.

The company blamed itself, not Oracle Corp., for the problems. Oracle declined to comment.

"Our first commandment is 'maintain a bullet-proof balance sheet,' but while the spirit is strong, the flesh made a mistake," Overstock CEO Patrick Byrne said in an Oct. 24 letter to shareholders.

He said Overstock personnel made mistakes during the installation of the Oracle ERP software. "We didn't hook up some of the accounting wiring" and then tried to fix the problems manually, Byrne said. "We've since found that these manual fixes missed a few of the unhooked wires."

The ERP errors forced the company to restate its earnings from 2003 through the second quarter of this year, Byrne said. The company cut its reported $3.5 billion in revenue over the period by $12.9 million and boosted its reported $184.7 million net loss by $10.3 million, he added.

> **We weren't recording some customer refunds, and we weren't recouping some costs from partners on some returns. The combined result was that our returns costs looked reasonable.**
>
> SENIOR VICE PRESIDENT OF FINANCE, OVERSTOCK.COM INC.

Kevin Moon, director of investor relations at Salt Lake City-based Overstock, said the company rushed to launch the Oracle ERP software before the Christmas shopping season in 2005.

"Honestly, it didn't have anything to do with Oracle per se; it was the implementation," he said. "We had consultants and we had help, but it was all driven by Overstock."

In a letter to shareholders, David Chidester, senior vice president of finance, said the problems during what he called "a major system upgrade" included mistakes in Overstock's process of accounting for customer refunds and order cancellations.

Once the problems were discovered, Overstock "re-examined [its] procedures for testing and verification of the balance sheet [and] put into place processes to record all refunds in our financial system," he said.

Ray Wang, an analyst at Forrester Research Inc., said that such ERP problems can be avoided with adequate internal planning and design efforts.

"The ERP system will do what you design it to do," Wang added, "which is why we often say it's very important to spend time on design and mapping."

— Chris Kanaracus, IDG News service

Short Takes

Sun Microsystems Inc. said a downturn in the financial services industry is a major reason for a $1.68 billion loss in its first quarter, which ended Sept. 28. Revenue fell to $2.99 billion, down from $3.22 billion a year ago.

Symantec Corp. expects to begin laying off employees next month because of an IT spending slowdown. CFO James Beer didn't disclose the number of layoffs but said the company wants to trim 4.5% from costs associated with its workforce of 17,800.

Hewlett-Packard Co., Dell Inc. and Toshiba Corp. are recalling Sony-made laptop batteries because of a risk that they may catch fire. Sony said users have reported 40 incidents of overheating.

Four former Dell HR executives have filed a $500 million class-action lawsuit against the company, alleging that its salary and promotion policies discriminate against women and that recent layoffs unfairly targeted women and employees over 40 years old.

SECURITY

Sysadmin Sentenced for Attack on Firm's Servers

A SYSTEMS ADMINISTRATOR last week was sentenced to six months in prison for sabotaging three servers at his former workplace.

Priyavrat Patel had pleaded guilty in federal court in January to knocking out the servers over the long Thanksgiving weekend last year, critically damaging operations at his former employer, Pratt-Read Corp., a 200-year-old toolmaker in Shelton, Conn.

Patel has separately agreed to pay $120,000 in restitution to Pratt-Read. The company had fired him about a month before the incident, ending his eight-year stint as a contract systems administrator there.

In the court filings, prosecutors said that Patel accessed the Pratt-Read servers from home after he "had a few drinks." According to the plea agreement, he deleted critical files used by the servers during boot-up, knocking e-mail, database and administration servers offline.

The attack crippled Pratt-Read operations for two weeks, forcing the company to use paper records for a portion of that time, according to court filings. "Without the deleted operating system files, the servers could do nothing when restarted, except print an error message," prosecutors contended.

Patel's attorney argued that the recovery was slowed because Pratt-Read caused additional damage during repairs.

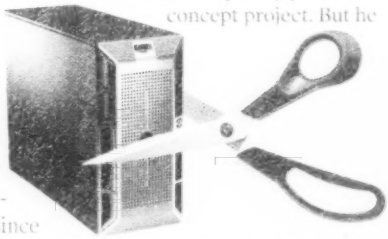
– ROBERT McMILLAN, IDG NEWS SERVICE

VIRTUALIZATION

Nationwide Aims to Cut Its Server Count in Half

NATIONWIDE Mutual Insurance Co. says it's on track to reduce its physical count of x86 servers from about 5,000 machines several years ago to 2,500, via the use of VMware Inc.'s virtualization software.

The Columbus, Ohio-based insurer estimates that it has saved a total of $2.2 million in server hardware costs since launching the consolidation effort. Its average ratio of virtual systems per physical server is 13-to-1, and some boxes are hosting as many as 20 virtual machines.



And by reducing its need for additional floor space and electrical power, Nationwide has been able to put off a planned data center expansion for three years.

But before Nationwide's IT staff can move an application to a virtual system, it has to sell the concept to business users, said Scott Miggo, vice president of infrastructure engineering at Nationwide Services Co., the insurer's IT arm.

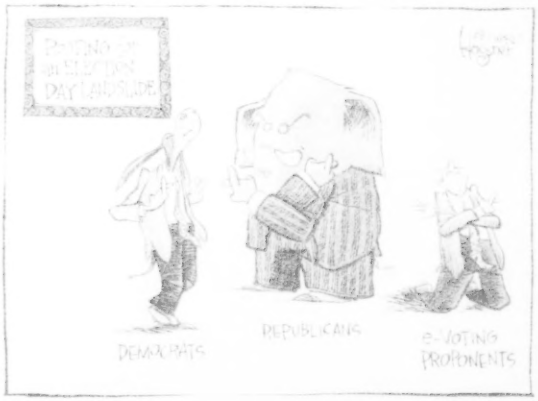
The users often raise technical questions, but Miggo senses a broader underlying concern. "They feel that they have more control [of physical servers]," he said last week.

IT tries to assure the users that there are "all kinds of fail-safes," Miggo said. For instance, Nationwide is using VMware's VMotion tool to quickly move virtual machines to new servers as needed. And in an effort to further speed up that process, the company is working with VMware to create a "migration factory" tool set, he said.

Miggo said he would also be interested in working on a cloud computing proof-of-concept project. But he isn't convinced that providers of cloud services can deliver the round-the-clock reliability required by production applications. "I'm not too sure anybody can tell me that," he added.

— Patrick Thibodeau

BETWEEN THE LINES *By John Klossner*



BENCHMARKS LAST WEEK

Following drop-offs in their stock prices, Brocade Communications Systems Inc. and Foundry Networks Inc. agreed to reduce the price of Brocade's proposed buyout of Foundry from $3 billion to $2.6 billion.

Also because of the economy, Motorola Inc.'s spin-off of its cell phone unit, originally planned for next year's Q3, has been postponed.

FIVE YEARS AGO: Hewlett-Packard Co. stopped selling its HP e3000 midrange systems, which debuted in 1972 (without the "e") and were one of the industry's top-selling minicomputer lines.

Global Dispatches

Intel Investing $170M in China

BEIJING – CEO Paul Otellini announced at a press briefing here last week that Intel Corp. is investing $170 million (U.S.) in projects and companies in China.

Otellini said the company is investing $150 million in 67 projects around China, including joint efforts with Lenovo Group, Haier Group, Neusoft Group and Tsinghua University.

Intel didn't elaborate on the plans, except to say that they would "support the advancement of China's IT ecosystem and homegrown innovation."

The company added that its Intel Capital unit will invest $20 million in three Chinese companies – NP Holdings, Trony Solar and ViewHigh Technologies – that are working on clean technology projects.

Steven Schwankert, IDG News Service

CSC Expanding Chinese Operations

TIANJIN, China – Computer Sciences Corp. (CSC) last week said that it has started building a new IT services delivery center here.

The Falls Church, Va.-based services firm didn't disclose the size of the new IT center, but it did say that construction is slated to be completed in mid-2010. Operations will begin next spring with 200 employees working at a temporary location.

CSC expects to employ 500 people at the new facility within three years.

The data center will provide application development, maintenance and help desk services, the company said.

Steven Schwankert, IDG News Service

BRIEFLY NOTED

IBM has signed a one-year, $70 million Australian ($47 million U.S.) extension to its contract to provide support services to Medicare Australia, the country's universal health insurance program. IBM provides call center support and supports the agency's data warehouse and its desktop, midrange and mainframe systems.

Andrew Hendry, Computerworld Australia

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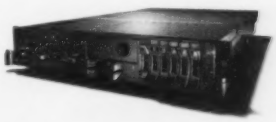

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Mobile WiMax May Not Make Corporate Connections

Sprint Nextel's Xohm network is live in one city and being rolled out in more. But WiMax technology has enterprise limitations. By Matt Hamblen

CAN MOBILE WiMax work for business users who are looking for high-speed wireless Internet access?

Sprint Nextel Corp. and financial backers that include Intel Corp. and Google Inc. think it can.

"We're definitely targeting businesses," said Barry West, president of Sprint's Xohm unit, which launched its namesake network in Baltimore in late September and plans to expand the WiMax offering to five more cities by early next year.

Even though the eventual nationwide rollout of Xohm is just starting, West said it's possible to make a compelling case for business uses of the network, particularly at small and midsize companies. He claimed that 70% of business activities are conducted within 50 miles of workers' homes — a statistic that should make a fast citywide network like Xohm look appealing, he said.

But Xohm and WiMax in general have some obvious limitations, according to wireless technology analysts. The biggest one, for now, is that the Sprint network is operational in only one city. Large companies likely wouldn't want to support laptop PCs and handheld devices on a network like Xohm unless it's running in numerous locales.

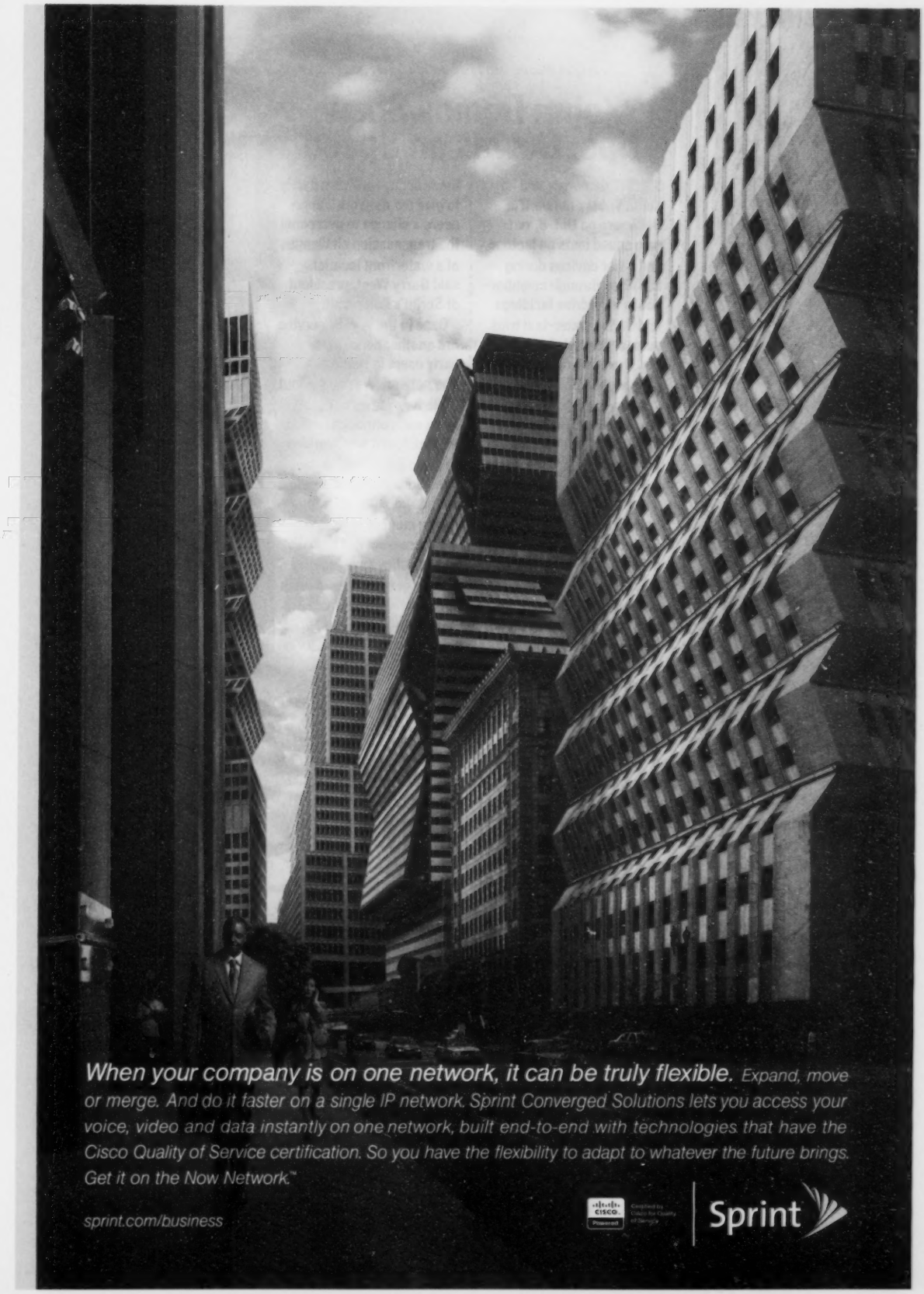
Another issue is how far Xohm can reach within cities, and whether the so-called fourth-generation wireless technology can provide users with consistently good service. Even in Baltimore, about 30% of the 300 antennas that Sprint plans to install still weren't in place as of early October (see related story, page 12).

To help ensure full coverage for Xohm users, Sprint is working with hardware manufacturers to make available by year's end a laptop USB modem or aircard that can switch between the WiMax service and existing 3G wireless networks. Analysts such as Gartner Inc.'s Phillip Redman said it will be hard to know how truly mobile Xohm users can be until that gear is tested.

In addition, some analysts simply aren't convinced that there will be much demand for WiMax's high-speed mobile capabilities among business users. "There's a legitimate question whether this is mobile broadband for soccer moms," Redman said.

At least one company has started using the Xohm network in Baltimore. National

Continued on page 12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Continued from page 10

Imaging Systems Inc., which sells Hewlett-Packard printers and printing supplies, has connected seven laptops and desktop PCs to the Sprint network via a single WiMax modem from ZyXel Communications Corp.

National Imaging has 17 employees and is based in a warehouse and office park in Glen Burnie, Md., about eight miles south of downtown Baltimore. Richard Levy, the company's CEO, said the office park isn't served by cable or DSL networks, so WiMax was a welcome alternative to the T1 line that National Imaging had been relying on for all of its voice, data and video transmissions.

"When I read about WiMax coming, I was on the phone right away ordering it," Levy said. The T1 service wasn't sufficient, especially when workers started making phone calls at the same time, he noted. So now National Imaging uses WiMax for data and video, leaving the T1 to handle only its voice calls.

Part of Levy's plan is to use Xohm along with Skype to support live videoconferencing between customers and the company's technicians on repair calls. "If you can show the customer what you want to do, it makes it a lot easier," he said.

FASTER IS BETTER

Thus far, Levy said, the WiMax service is working satisfactorily, even when the downlink speed is just above the minimum level of 2Mbit/sec. that Sprint promises users. But, he added, if transmission speeds increase as the Baltimore network is built out, "that would be even better."

Wasif Malik, director of mobile solutions at the Ohio State University Medical Center, said that like many other IT managers, he's itching for a faster wireless network to meet the needs of bandwidth-hungry end users. Malik supports hundreds of medical residents and students who use iPhones or other handhelds and require voice-calling capabilities as well as the ability to access online medical references and other data on the Web.

"It's crucial to us to have a faster network," Malik said. "WiMax is interesting, and I'm interested in testing it." The medical center's network administrators would probably insist on having users convert to a Wi-Fi network inside the hospital grounds, he said. But when users are off the property, a high-speed technology like WiMax could be helpful.

WiMax, which is based on the IEEE 802.16e standard, looks to be "much more secure" than Wi-Fi is, said Jorge Mata, CIO for the Los Angeles Community College District. Mata also thinks WiMax could provide a larger area of coverage with less infrastructure than broadband wireless technologies require now. The only drawback, he said, is that Xohm's availability is so limited at the moment.

Sprint's Xohm unit is being folded into a joint venture with wireless ISP Clearwire Corp. to continue the network's deployment. The new company, which will be called Clearwire, is scheduled to be in place this quarter. Rollout plans call for Xohm to be launched in Chicago and Washington by year's end and in Boston, Philadelphia and Dallas-Fort Worth in 2009.

Inevitably, there will be questions about how solid the new Clearwire's financial footing is. But Sprint and Clearwire officials insist that users have nothing to worry about on that front, pointing to the $3.2 billion in funding that the joint venture is getting from Google, Intel and three cable companies. That will cover nearly half of the projected $7 billion cost of expanding the Xohm network to 100 cities by the end of 2010.

Another possible roadblock for WiMax, though, is competition with the rival Long Term Evolution wireless technology. LTE networks aren't expected to be deployed until 2011 at the earliest, but that technology is the upgrade path of choice for mobile network operators that support the dominant GSM standard.

In a recent white paper, Forrester Research Inc. said WiMax could eventually be used to augment existing broadband connections — for example, to extend Wi-Fi signals or even wired LANs to spots within a building or office campus that couldn't be reached otherwise. WiMax could also be more cost-efficient than other cellular technologies, because it can support more users within the range of a single antenna, Forrester said.

But for now, Xohm's lack of reach is a big turnoff for corporate users, Forrester analyst Lisa Pierce said via e-mail. "Until significantly greater service availability exists," she wrote, "WiMax won't be anything more than a trial [technology] or curiosity to enterprises." ■

Xohm Demos Show Ups, Downs on Speed

SPRINT demonstrated its Xohm WiMax network in Baltimore on Oct. 8, running speed tests on laptops and other devices during bus rides through neighborhoods of midrise buildings and during water-taxi trips across the city's Inner Harbor. Downlink speeds typically topped 3Mbit/sec.

Sprint is advertising average downlink rates of 2Mbit/sec. to 4Mbit/sec. In the tests onboard the water taxi, though, the speeds sometimes fell below the bottom end of that range. Sprint and Intel engineers said the lower throughput was due to the fact that various types of radio signals can interfere with one another while traveling over water.

Baltimore was chosen as the first city for Xohm partly to give the network's engineers a chance to overcome the transmission challenges of a waterfront location, said Barry West, president of Sprint's Xohm unit.

Gaps in the WiMax service are another concern for early users in Baltimore. The network was only about 70% finished as of Oct. 8, West said, although he added that Sprint was working to close the coverage gaps.

In addition, transmission speeds could be affected as the number of Xohm users increases. But Sprint's usage policy says that the vendor may limit bandwidth for some applications, including file sharing, in order to ensure a "high-quality experience" for all users.

– MATT HAMBLEN

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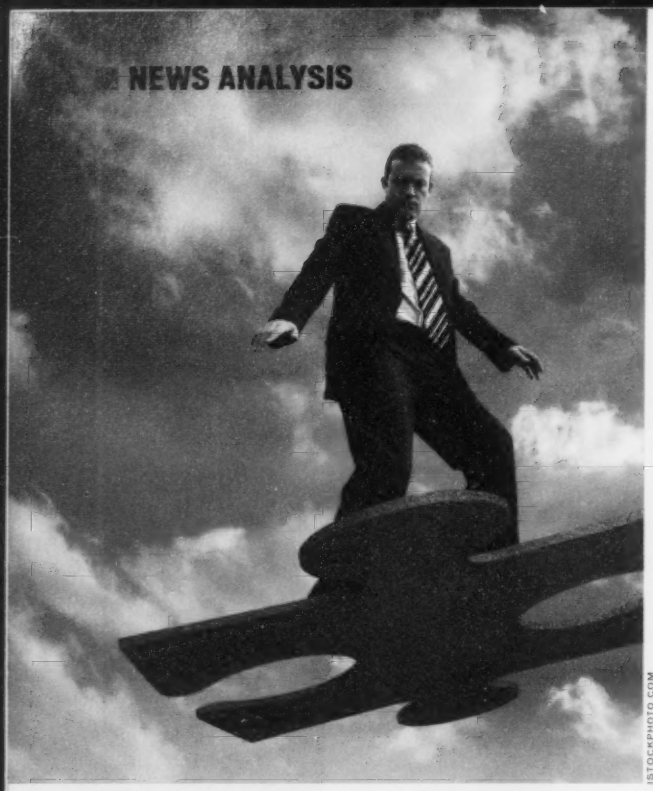

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Microsoft Takes Two Big Leaps Into the Cloud

The software vendor has been something of a sleeping giant on cloud computing. But it's waking up. By Elizabeth Montalbano and Eric Lai

WINDOWS 7 made its public debut at Microsoft Corp.'s Professional Developers Conference in Los Angeles last week. But it had to share the spotlight with two other technologies, both aimed at jump-starting Microsoft's cloud computing efforts.

The company opened the PDC by detailing Windows Azure, a cloud computing version of its operating system that will underlie an application hosting service designed to compete with Amazon.com Inc.'s Elastic Compute Cloud (EC2).

Microsoft also said it's developing a set of applications called Office Web that has lightweight versions of Word, Excel, PowerPoint and OneNote for use in Web browsers. That move is meant to help it fend off competition from Google Docs and other suites of online apps.

"This is the big fish jumping into the pond," IDC analyst Melissa Webster said about Office Web — a comment that just as easily could have applied to Azure.

Microsoft isn't entirely new to cloud computing. For example, it currently offers Web-based services such as Windows Live and Office Live (described as an "online extension" of Office) to individuals and small businesses.

But Windows Azure is being pitched as a platform for moving corporate applications into the cloud. And Amazon has gotten a long head start with EC2.

Ray Ozzie, Microsoft's chief software architect, said that work on Azure began two years ago, just before Amazon launched EC2 in beta mode. Amazon removed the "beta" tag on Oct. 23 and said EC2 was ready for production use. Microsoft, which released a preview version of Azure to PDC attendees, isn't saying when its service will go live.

Ozzie tipped his hat to Amazon for being first. But he said that Microsoft has "somewhat broader and different objectives" in developing Azure than Amazon did with EC2. Microsoft has to continue supporting its global network of software developers, Ozzie noted, adding that they will be able to use the company's .Net tools to build applications for Azure.

Nonetheless, cloud computing will require changes in IT departments. RedMonk analyst James Governor jokingly compared the cloud approach to "wearing your underpants on the outside of your clothes."

Developers, he said, have to expose applications to end users via the Web while still focusing on things such as security and scalability behind the scenes. "This externalization and rethinking the role of IT — it's something that all enterprise organizations are going to have to face," Governor said.

Pitney Bowes Management Services Inc., which handles tasks such as mailing and shipping for corporate clients, is working with Microsoft to test an Azure version of an application for digitizing paper mail.

Terry Doeberl, director of business development at the Pitney Bowes Inc. unit, said one benefit of the cloud model is that it separates applications from the operating system layer, freeing IT from having to update apps on individual PCs.

The same will apply to Office Web, which Microsoft plans to release late next year with the next version of the full Office suite.

The Office Web apps won't have all the features of their desktop siblings, said Chris Caposella, senior vice president of Microsoft's business division. And Office 2007's Ribbon user interface won't be included because it takes up too much screen space. Instead, Microsoft plans to modify the drop-down menus from earlier versions of Office.

IDC's Webster said it's impossible at this point to gauge how Office Web will do compared with Google Docs and other online suites. "But with something like 97% of the [desktop applications] market," she wrote in an e-mail, "Microsoft is certainly the very strong incumbent."

To maintain that wide of a lead, though, Microsoft will have to show that it can keep its head in the cloud. ■

Montalbano *writes for the IDG News Service.*

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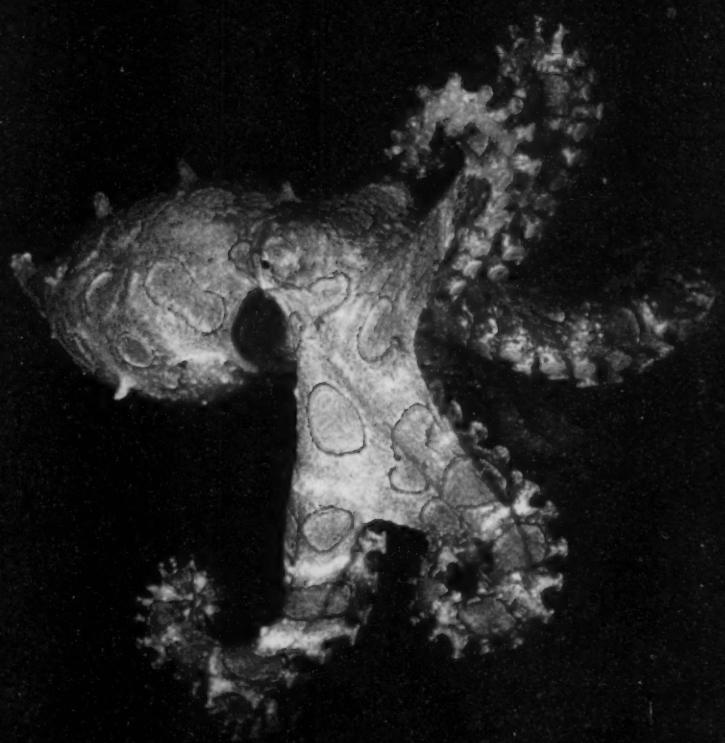

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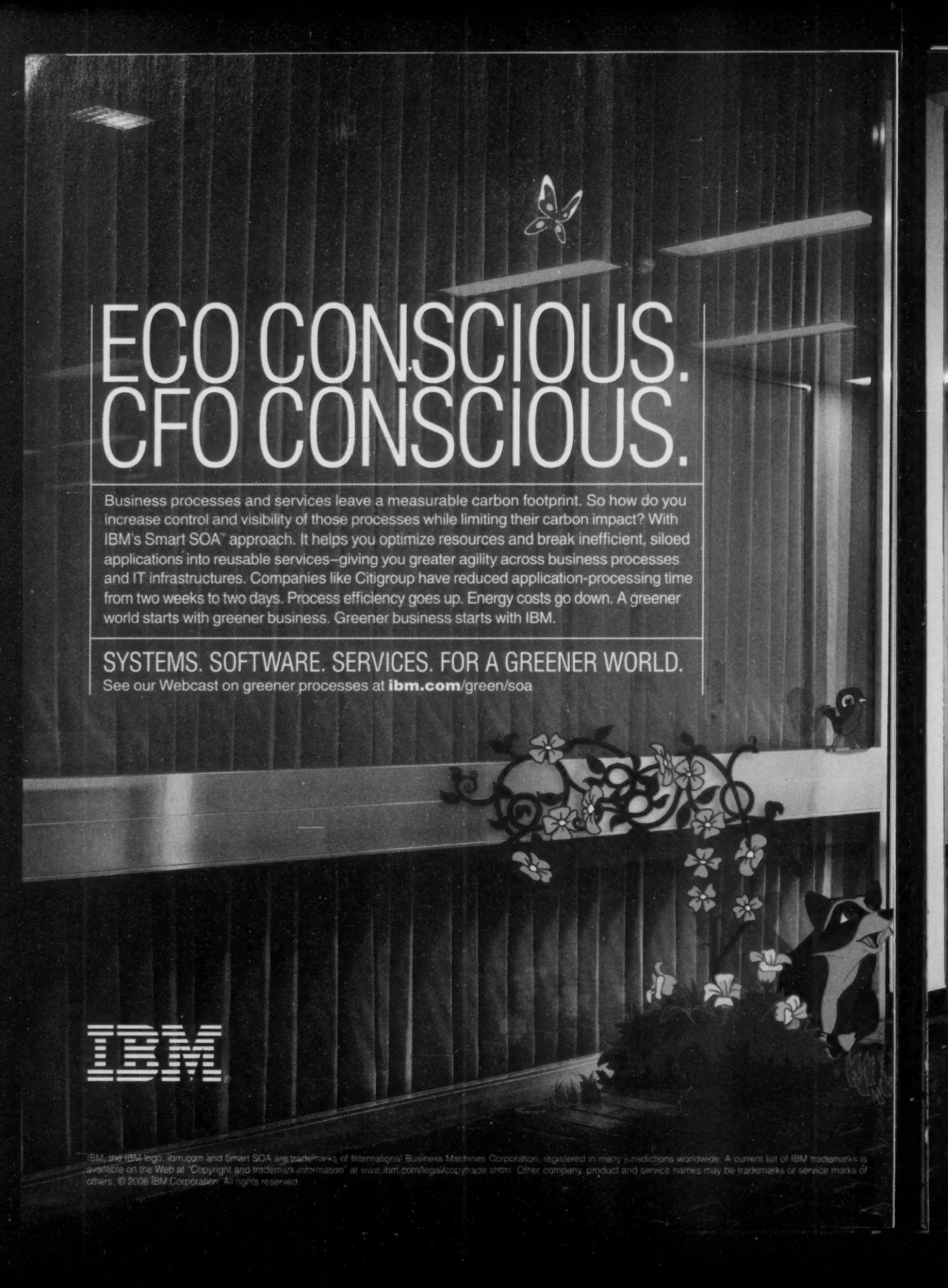
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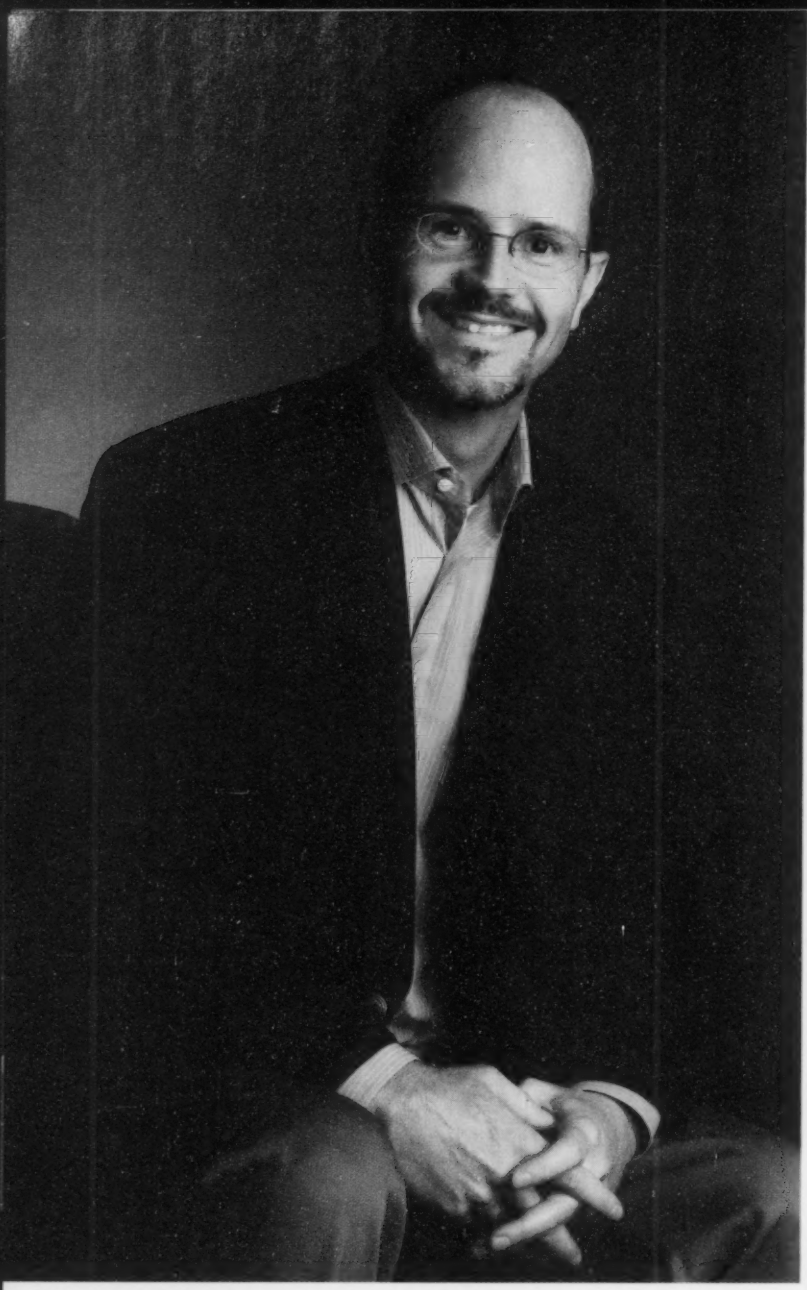

Dossier

Name: Rob Alexander

Title: CIO and executive vice president

Organization: Capital One Financial Corp.

Location: McLean, Va.

Most memorable job: "I was a Cobol programmer in the Pentagon for a summer job. My claim to fame was I wrote a program that brought down their main logistics system, and the colonel who ran the organization had to go brief the general on what happened."

Favorite food: "My wife's spaghetti."

In high school, he was: "Transient. My dad was in the military, so we lived all over the U.S. It wasn't great socially, but it created a lot of my self-reliance, independence and resilience."

Most interesting thing people don't know about him: "I can still hold my own with my 14-year-old on Xbox 360."

Philosophy in a nutshell: "It's our job as leaders to do everything we can to make members of a team successful – to help break down barriers, to make decisions quickly, to develop and coach them so they can reach their full potential. Too often, leaders think about themselves."

■ THE GRILL

Rob Alexander

Capital One's CIO talks about taking a conservative approach to **finance,** easing **customer anxieties** and using IT to boost **efficiency** in tough times.

Rob Alexander is the head of customer enterprise management at Capital One and is responsible for overseeing all of the financial services firm's technology activities, including an aggressive push to develop new online service capabilities.

How has the current financial crisis affected your business? Obviously, it's a challenging time for financial services firms. Lending companies in this kind of environment tend to be fairly cautious. That's the right approach, but we also want to position ourselves for the turnaround so we're able to be competitive as we start to come out of this cycle.

From a customer perspective, we see

Continued on page 20

It's what's fashionable in IT this year.

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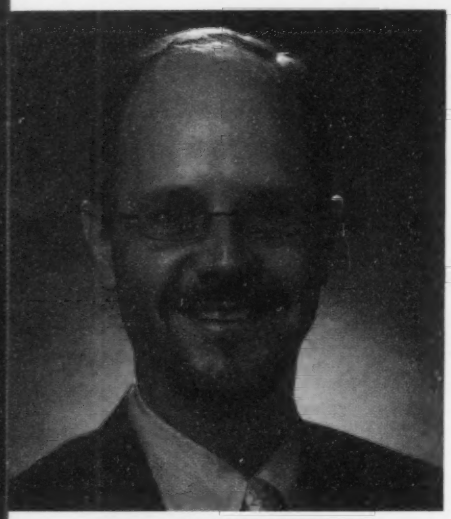

"Customers are stressed, and we want to be able to meet their needs as efficiently as possible.

Continued from page 18

a real need to make sure we're delivering the best possible customer experience through a very stressful time. We continue to invest heavily in technology for the branch customer experience, our phone call-center customer experience and around the online channel.

Customers are stressed, and we want to be able to meet their needs as efficiently as possible — to help customers manage their finances online so they're better able to weather that storm. We continue to see technology as a way to drive more efficiency in how we operate as a company.

Have the past few years taught you any lessons? We've always had a very conservative approach to how we underwrite in the marketplace. Sticking to our principles around how we lend to customers and really focusing on a strong balance sheet, capital and liquidity makes us well positioned to ride out a difficult economic environment. I think it's easy for financial services firms to get lured away from that in the boom times and to come to regret it in the down times.

Which technologies are currently causing the biggest impact on Capital One's business? I would say analytics. There's a demand [to] use information to make better decisions about marketing and [about] the products we develop to improve credit underwriting decisions and servicing decisions. That's a theme in the financial services industry; the innovation cycle time has sped up. Technology needs to support that because customer expectations have gone up dramatically, in large part driven by the Internet.

How can you assure customers that their online data is safe? I'm sure there will always be a set of customers who don't want to operate online because of those security concerns, but I think that will diminish over time.

Customers want to pay their bills online, they want to get their statements electronically — and we're providing those capabilities. We're very sensitive to what happens when there's a data breach and the reputation impact — or even potentially very serious financial impact — it can have on a company.

We have [invested in] rigorous protection of our customers' information, including teams of people internally who are focused on how to defend against phishing attacks or any other kinds of electronic attacks against our site or network. Even with the news about security [breaches], there is a huge demand and uptake for online services.

Has the popularity of the iPhone and other mobile devices put new IT demands on your business? Yes, it has. There is no question that mobile banking solutions are becoming a table-stakes thing. There are a lot of different ways to deliver mobile solutions, and I think we have some pretty cool things we're working on that have the opportunity to create some differentiation there.

Mobile is going to be such an important platform for us. It's a ubiquitous platform today, but it's driven by generational changes. The comfort that younger generations have today with doing transactions over mobile devices is just going to make this pressure grow over time for us.

How is Capital One responding to new storage demands created by the explosion of data? Disaster recovery and the need to do data replication has really driven changes in our need for data storage. For example, we recently put in place a new online servicing platform that has dramatically different storage needs than the previous system. We have different data-retention requirements for different types of data, and we're tackling this head-on. We have an initiative internally where we're trying to look at our whole storage footprint and understand how we can really optimize that — to reduce cost and be more efficient.

How important is IT innovation to your business? Innovation for us is critical. For financial services, our product *is* IT, in a way. It's an intangible product that we deliver through IT solutions. Yes, there's a whole relationship and personal component part of it, particularly in branch and commercial banking. But a lot of what we do is all about technology.

Recently, I was on my California tour where I visited a bunch of major technology players. Essentially, with each of them I said, "Tell me about your strategy, where you're going and some of your developments."

At Capital One, we have an advanced technology group whose job is to look at some of these cutting-edge technologies [and] pilot some of those things so we can introduce ideas to the business.

How will Capital One interact with customers in a Web 2.0 world? When it comes to Web 2.0 technologies and things like Facebook and new collaboration tools, we're really excited about those in terms of helping to spur innovation within Capital One about things we can offer to customers online, and also [in terms of] the opportunity to create some breakthroughs in productivity and the connectedness of people to the enterprise.

It's an important opportunity for us, and we're pushing hard to determine how we can deploy some of these technologies internally.

— *Interview by* **Brian Fonseca**

■ OPINION

Sharon Machlis

Will Your Vote Count Tomorrow?

WHAT'S INTUITIVE and simple for a system designer isn't necessarily easy and obvious for a cross-section of system users. Which brings us to tomorrow's election.

Even if you believe that voting machines are tamperproof and that any "honest" computer tabulation errors won't affect the final results (making you more of an optimist than I am), there's another concern: Are systems easy enough to use so that anyone — and I mean *anyone* — can operate them properly? How about harried parents in a hurry or people who are intimidated by technology?

In 2000, the answer was no. Florida's hanging chads showed that even a simple punch-card system can be poorly designed, since many voters didn't push their choices all the way through.

Even worse was the butterfly ballot in Palm Beach County, where thousands of votes were cast erroneously because of a confusing design. The irony is that the county decided on a two-page ballot design to make it easier for elderly voters by providing enough space for larger print.

However, thousands ended up selecting more than one candidate for president because they couldn't tell where the choices lined up.

Had there been pre-election user-interface tests with random voters, feedback may have prompted election officials to redesign the ballot.

How important would that have been? After the election, *The Palm Beach Post* concluded that Al Gore lost more than 6,600 votes in the county because of voters who chose both Gore and Pat Buchanan for president. Official election results say George W. Bush won Florida — and thus the presidency — by just 537 votes.

Lesson: Any system should undergo rigorous testing by a cross-section of people who are likely to use it — not only by the people involved in designing it.

That's especially true when the system involved is electronic.

Already, in early voting this year, there have been several complaints that touch screens inaccurately recorded votes. Two West Virginia voters told *Computerworld* that they touched the screen for one candidate but the machine switched the selection to another.

■ Already, in early voting, there have been several complaints.

An election official speculated that the problem could be caused by unintentionally rolling a finger across the screen. In any case, the machines were recalibrated, and it appears that no more voters complained there. However, whether the problem was malfunctioning machines or user error, it's a serious issue if voters are unable to easily register their intent.

It's not OK to blame user error. If a task isn't as easy as filling in circles on a paper ballot, it's time to reexamine the system.

The key here is "easy." The *Jackson Daily Progress* in Texas recently published instructions for Cherokee County's Hart InterCivic touch-screen systems. They included multiple steps, like selecting a language, entering a four-digit access code, moving a wheel to highlight a choice, selecting "enter," then reviewing a ballot summary screen, then. . . . Sorry, but you shouldn't need an instruction sheet to cast a vote.

So how will we know if there are problems with voting systems tomorrow? In many other parts of the world, experts consider a difference between exit polls and announced results a strong signal that something is amiss. (Unlike pre-election polling, exit polls don't ask people their opinions or how they expect to vote; they ask actual voters which candidate they picked.)

In Florida in 2000, exit polls calling the state for the Democrats may very well have accurately measured that a majority of voters *thought* they cast their votes for Gore.

Discrepancies between exit polls and results may not be able to determine whether the issue is malicious hacking, honest tabulation errors, system malfunctions or users selecting a different candidate than they intended due to poor system design. But imperfect as such post-election comparisons may be, they're as close to an independent nationwide system audit as we're likely to get for the 2008 results. ■

Sharon Machlis *is the managing editor of* Computerworld.com. *You can reach her at sharon_machlis@computerworld.com.*

Stormy Weathe

Users hit turbulence on the trip to c

ILLUSTRATION BY VIKTOR KOEN

cloud computing. By Mary Brandel

WHEN THE COMPUTER INDUSTRY buys into a buzzword, it's like getting a pop song stuck in your head. It's all you hear. Worse, the same half-dozen questions about the hyped trend are incessantly paraded out, with responses that succeed mainly in revealing how poorly understood the buzzword actually is.

These days, the hottest buzzphrase is "cloud computing," and for John Willis, a systems management consultant and author of an IT management and cloud blog, the most annoying question is this: Will enterprises embrace this style of computing?

"It's not a binary question," he asserts. "There will be things for the enterprise that will completely make sense and things that won't."

The better question, he says, is whether you understand the various offerings and architectures that fit under that umbrella term, the scenarios where one or more of those offerings would work, and the benefits and downsides of using them.

Even cloud users and proponents don't always recognize the downsides and thus don't prepare for what could go wrong, says Dave Methvin, chief technology officer at PC Pitstop LLC, which uses Amazon.com Inc.'s S3 cloud-based storage system and Google Apps. "They're trusting in the cloud too much and don't realize what the implications are," he says.

With that as prologue, here are seven turbulent areas where current and potential users of cloud computing need to be particularly wary.

COSTS, PART I: CLOUD INFRASTRUCTURE PROVIDERS

When Brad Jefferson first founded Animoto Productions, a Web service that enables people to turn images and music into high-production video, he chose a Web hosting provider for the company's processing needs. Looking out over the horizon, however, Jefferson could see that the provider wouldn't be able to meet anticipated peak processing requirements.

But rather than investing in in-house servers and staff, Jefferson turned to Amazon's Elastic Compute Cloud, a Web service known as EC2 that provides resizable computing capacity in the cloud, and RightScale Inc., which provides system management for users of Web-based services such as EC2. With EC2, companies pay only for the server capacity they use, and they obtain

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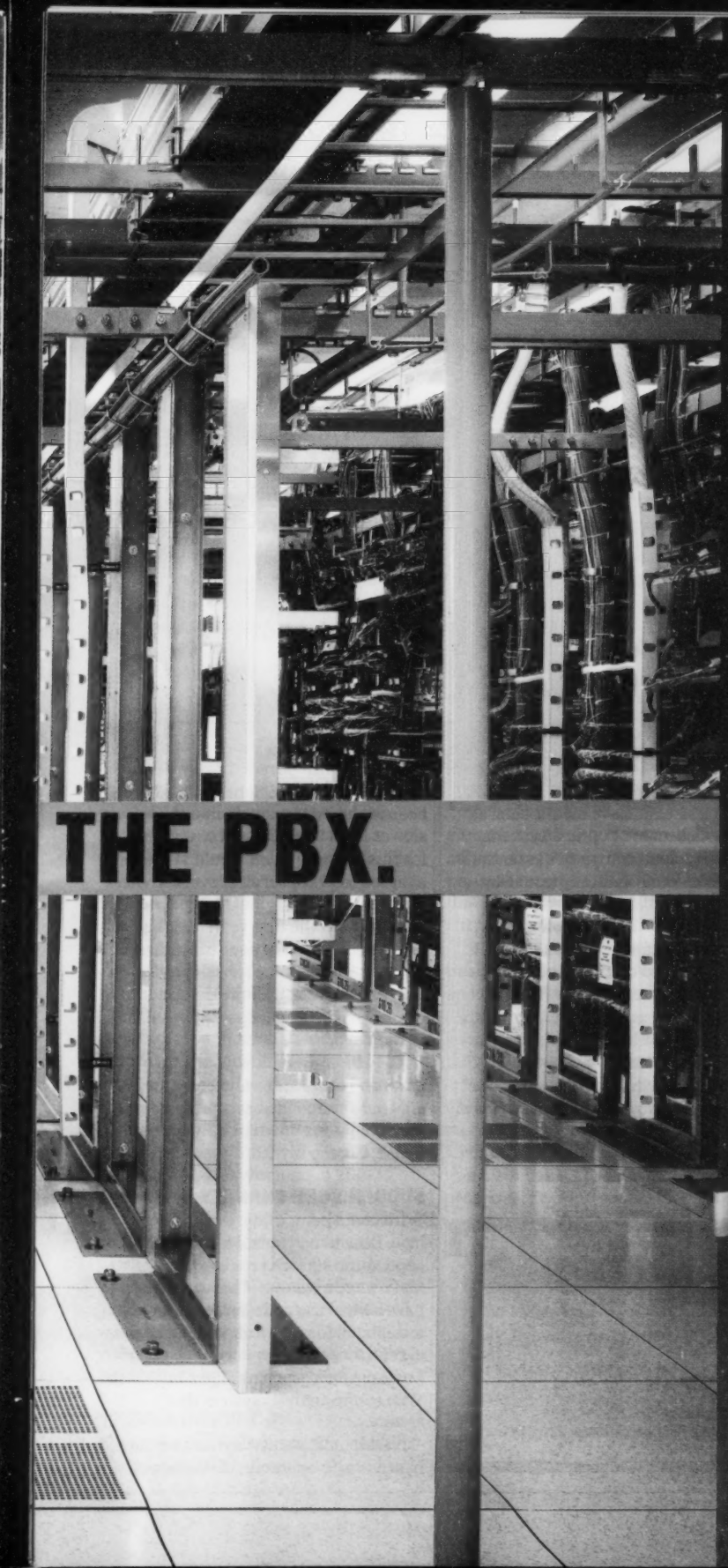

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and configure capacity over the Web.

"This is a capital-intensive business," Jefferson said in a recent podcast interview with Willis. "We could either go the venture capital route and give away a lot of equity or go to Amazon and pay by the drink."

His decision was validated in April, when usage spiked from 50 EC2 servers to 5,000 in one week. Jefferson says he never could have anticipated such needs. Even if he had, it would have cost millions to build the type of infrastructure that could have handled that spike. And investing in that infrastructure would have been overkill, since that capacity isn't needed all the time, he says.

But paying by the drink might make less economic sense once an application is used at a consistent level, Willis says. In fact, Jefferson says he might consider a hybrid approach when he gets a better sense of Animoto's usage patterns. In-house servers could take care of Animoto's ongoing, persistent requirements, and anything over that could be handled by the cloud.

COSTS, PART II: CLOUD STORAGE PROVIDERS

Storage in the cloud is another hot topic, but it's important to closely evaluate the costs, says George Crump, founder of Storage Switzerland LLC, an analyst firm that focuses on the virtualization and storage marketplaces.

At about 25 cents per gigabyte per month, cloud-based storage systems look like a huge bargain, Crump says. But although Crump is a proponent of cloud storage, the current cost models don't reflect how storage really works, he says. That's because traditional internal storage systems are designed to reduce storage costs over the life of the data by moving older and less-accessed data to less-expensive media, such as slower disk, tape or optical systems. But today, cloud companies essentially charge the same amount "from Day One to Day 700," Crump says.

Amazon's formula for calculating monthly rates for its S3 cloud storage service is based on the amount of data being stored, the number of access requests made and the number of data transfers, according to Methvin. The more you do, the more you pay.

Crump says that with the constant decline of storage media costs, it's not economical to store data in the cloud over a long period of time.

Cloud storage vendors need to create a different pricing model, he says. One idea is to move data that hasn't been accessed in, say, six months to a slower form of media and charge less for this storage. Users would also need to agree to lower service levels on the older data. "They might charge you $200 for 64G the first year; and the next year, instead of your having to buy more storage, they'd ask permission to archive 32G of the data and charge maybe 4 cents per gigabyte," Crump explains.

To further drive down their own costs and users' monthly fees, providers could store older data on systems that can power down or off when not in use, Crump says.

SUDDEN CODE CHANGES

With cloud computing, companies have little to no control over when an application service provider decides to make a code change. This can wreak havoc when the code isn't thoroughly tested and doesn't work with all browsers. That's what happened to users of Los Angeles-based SiteMeter Inc.'s Web traffic analysis system this summer.

SiteMeter is a software-as-a-service-based (SaaS) operation that offers an

Cirrus or Cumulous?

There are various styles of cloud computing offerings. This is how cloud experts are currently summarizing them:

SOFTWARE AS A SERVICE (SAAS)
Description: Special-purpose software made available by a third party over the Internet, with a usage-based pricing model. Some call it "applications as a service."
Examples: Salesforce.com, NetSuite, Zoho

PLATFORM AS A SERVICE (PAAS)
Description: An integrated software environment for which systems administrators and developers can build, test and deploy custom applications.
Example: Google Apps Engine

INFRASTRUCTURE AS A SERVICE (IAAS)
Description: A service that provides the core computing resources and network fabric for the cloud deployment.
Examples: Amazon's Elastic Compute Cloud, Rackspace Hosting's Mosso service

CORE CLOUD SERVICES
Description: Stand-alone components built on cloud platforms that can be woven into cloud applications, such as billing, systems management and storage.
Examples: Amazon's S3, Microsoft BizTalk Services, RightScale

SOURCES: ROBERT ANDERSON, CHIEF TECHNOLOGY OFFICER, DIGIPEDE TECHNOLOGIES LLC, AND PETER LAIRD, SOFTWARE ARCHITECT, ORACLE CORP.

> "We could either go the venture capital route and give away a lot of equity or go to Amazon and pay by the drink."
>
> **BRAD JEFFERSON,** FOUNDER, ANIMOTO PRODUCTIONS

application that works by injecting scripts into the HTML code of Web pages that users want tracked. In July, the company released code that caused some problems. Any visitor using Internet Explorer to view Web pages with embedded SiteMeter code got an error message. When users began to complain, Web site owners weren't immediately sure where the problem was.

"If it were your own company pushing out live code and a problem occurred, you'd make the connection," Methvin explains. "But in this situation, the people using the cloud service started having users complaining, and it was a couple of hours later when they said, 'Maybe it's SiteMeter.' And sure enough, when they took the code out, it stopped happening."

The problem with the new code was greatly magnified because something had changed in the cloud without the users' knowledge. "There was no clear audit trail that the average user of SiteMeter could see and say, 'Ah, they updated the code,' " Methvin says.

Soon after, SiteMeter unexpectedly upgraded its system, quickly drawing the ire of users such as Michael van der Galien, editor of *PoliGazette*, a Web-based news and opinion site. The new version was "frustratingly slow and impractical," van der Galien says on his blog.

In addition, he says, current users had to provide a special code to reactivate their accounts, which caused additional frustration. Negative reaction was so immediate and intense that SiteMeter quickly retreated to its old system, much to the relief of van der Galien and hundreds of other users.

"Imagine Microsoft saying, 'As of this date, Word 2003 will cease to exist, and we'll be switching to 2007,' " Methvin says. "Users would all get confused and swamp the help desk, and that's kind of what happened."

Over time, he says, companies such as SiteMeter will learn to use beta programs, announce changes in advance, run systems in parallel and take other measures when making changes. Meanwhile, let the buyer beware.

SERVICE DISRUPTIONS

Given the much-discussed outages of Amazon's S3, Google's Gmail and Apple's MobileMe, it's clear that cloud users need to prepare for service disruptions. For starters, they should demand that service providers notify them of current and even potential outages.

"You don't want to be caught by surprise," says Methvin, who uses both S3 and Gmail. Some vendors have relied on passive notification approaches, such as their own blogs, he says, but they're becoming more proactive.

For example, some vendors are providing a status page where users can monitor problems or subscribe to RSS feeds or cell phone alerts that notify them when there's trouble. "If there's a problem, the cloud service should give you feedback as to what's wrong and how to fix it," Methvin says.

Users should also create contingency plans with outages in mind. At PC Pitstop, for instance, an S3 outage would mean users couldn't purchase products on its site, since it relies on cloud storage for downloads. That's why Methvin created a fallback option. If S3 goes down, products can be downloaded from the company's own servers.

PC Pitstop doesn't have a backup plan for Google Apps, but Methvin reasons that with all of its resources, Google would be able to get a system such as e-mail up and running more quickly than his own staffers could if they had to manage a complex system like Microsoft Exchange. "You lose a little bit of control, but it's not necessarily the kind of control you want to have," he says.

Overall, it's important to understand your vendor's fail-over strategy and develop one for yourself. For instance, Palo Alto Software Inc. offers a cloud-based e-mail system that uses a caching strategy to enable continuous use during an outage. Called Email Center Pro, the system relies on S3 for primary storage, but it's designed so that if S3 goes down, users can still view locally cached copies of recent e-mails.

Forrester Research Inc. advises customers to ask whether the cloud service provider has geographically dispersed redundancy built into its architecture and how long it would take to get service running on backup. Others advise prospective users to discuss service-level agreements with vendors and arrange for outage compensation. Many vendors reimburse customers for lost service. Amazon.com, for example, applies a 10% credit if S3 availability dips below 99.9% in a month.

Key Cloud Services Attributes

According to research firm IDC, cloud offerings must meet these criteria:

- Off-site, third-party provider
- Accessed via Internet
- Minimal/no IT skills needed to implement
- Provisioning:
  - Self-service requesting
  - Near-real-time deployment
  - Dynamic and fine-grained scaling
- Pricing model:
  - Fine-grained
  - Usage-based (at least available as an option)
- User interface: browsers and their successors
- System interface: Web services APIs
- Shared resources/common versions (customization "around" the shared resources)

"The reality is that most of the companies operating these services are not nearly as experienced as we hoped they would be.

RENE BONVANIE, SENIOR VICE PRESIDENT, SERENA SOFTWARE

VENDOR EXPERTISE

One of the biggest enticements of cloud computing is the promise of IT without the IT staff. However, veteran cloud users are adamant that this is not what you get. In fact, since many cloud vendors are new companies, their expertise — especially with enterprise-level needs — can be thin, says Rene Bonvanie, senior vice president at Serena Software Inc. It's essential to supplement providers' skills with those of your own in-house staff, he adds.

"The reality is that most of the companies operating these services are not nearly as experienced as we hoped they would be," Bonvanie says.

The inexperience shows up in application stability, especially when users need to integrate applications for functions like cross-application customer reporting, he says.

Serena itself provides a cloud-based application life-cycle management system, and it has decided to run most of its own business in the cloud as well.

It uses a suite of office productivity applications from Google, a marketing automation application from MarketBright Inc. and an on-demand billing system from Aria Systems Inc. So far, it has pushed its sales and marketing automation, payroll, intranet management, collaboration software and content management systems to the cloud. The only noncloud application is SAP, for which Serena outsourced management to an offshore firm.

According to Bonvanie, "the elimination of labor associated with cloud computing is greatly exaggerated."

The onus is still on the cloud consumer when it comes to integration. "Not only are you dealing with more moving parts, but they're not always as stable as you might think," he says.

"Today, there's no complete suite of SaaS applications, no equivalent of Oracle or R/3, and I don't think there ever will be," Bonvanie says. "Therefore, we in IT get a few more things pushed to us that are, quite honestly, not trivial."

GLOBAL CONCERNS

Cloud vendors today have a U.S.-centric view of providing services, and they need to adjust to the response-time needs of users around the world, says Reuven Cohen, founder and chief technologist at Enomaly Inc., a cloud infrastructure provider. This means ensuring that the application performs as well for users in, say, London as it does for those in Cincinnati.

Bonvanie agrees. Some cloud vendors "forget that we're more distributed than they are," he says.

For instance, San Bruno, Calif.-based MarketBright's cloud-based marketing application works great for Serena's marketing department in Redwood City, Calif., but performance diminished when personnel in Australia and India began using it. "People should investigate whether the vendor has optimized the application to work well around the world," Bonvanie says. "Don't just do an evaluation a few miles from where the hardware sits."

Worldwide optimization can be accomplished either by situating servers globally or by relying on a Web application acceleration service, also called a content delivery network, such as that of Akamai Technologies Inc. These systems work across the Internet to improve performance, scalability and cost efficiency for users.

Of course, situating servers globally can raise thorny geopolitical issues, Willis points out. Although it would be great to be able to load-balance application servers on demand in the Pacific Rim, Russia, China or Australia, the industry "isn't even close to that yet," he says. "We haven't even started that whole geopolitical discussion."

In fact, Cohen points out, some users outside of the U.S. are wary of hosting data on servers in this country. They cite the USA Patriot Act, which increases the ability of law enforcement agencies to search telephone, e-mail communications, medical and financial records and eases restrictions on foreign-intelligence-gathering within the U.S. The Canadian government, for instance, prohibits the export of certain personal data to the U.S.

"It's hazy and not well defined," Cohen says of the act. "People wonder, 'Can they just go in and take [the data] at a moment's notice, with no notification beforehand?' That's a whole second set of problems to be addressed."

NON-NATIVE APPLICATIONS

Some applications offered on SaaS platforms were originally designed for SaaS; others were rebuilt to work that way. For example, Bonvanie says, there's a very big difference between applications like WebEx and Salesforce.com, which were designed as SaaS offerings, and Aria's billing platform, which was not.

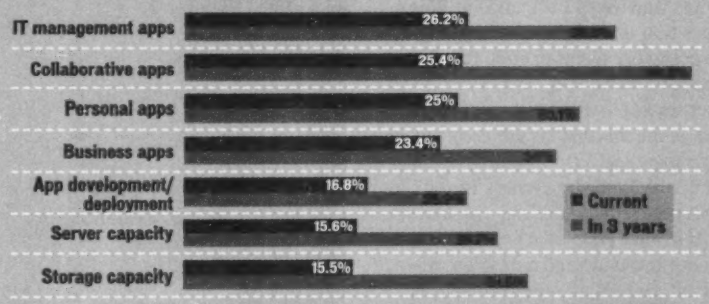
"It's highly complex and fits in the cloud, but its origins are not cloud-based," he says. "If the offering was not born [in] but moved to the cloud, you deal with a different set of restrictions as far as how you can change it."

Whatever "cloud computing" is to you — an annoying buzzphrase or a vehicle that might power your company into the future — it's essential to get to know what it really means, how it fits into your computing architecture and what storms you may encounter en route to the cloud. ■

Brandel *is a* Computerworld *contributing writer in Newton, Mass. Contact her at marybrandel@verizon.net.*

Cloud in the Enterprise

What are the current and future usage levels of IT cloud services in your organization?



Survey participants characterized current and future usage – on a scale from 1 (none) to 5 (widespread) – of a variety of IT cloud services within their organizations. The chart shows the percentage of respondents whose organizations are toward the higher end (4 or 5) of the usage scale and/or will be there in three years.

SOURCE: IDC SURVEY OF 244 CIOs, OTHER IT EXECUTIVES AND LINE-OF-BUSINESS EXECUTIVES CONDUCTED AUGUST 2008

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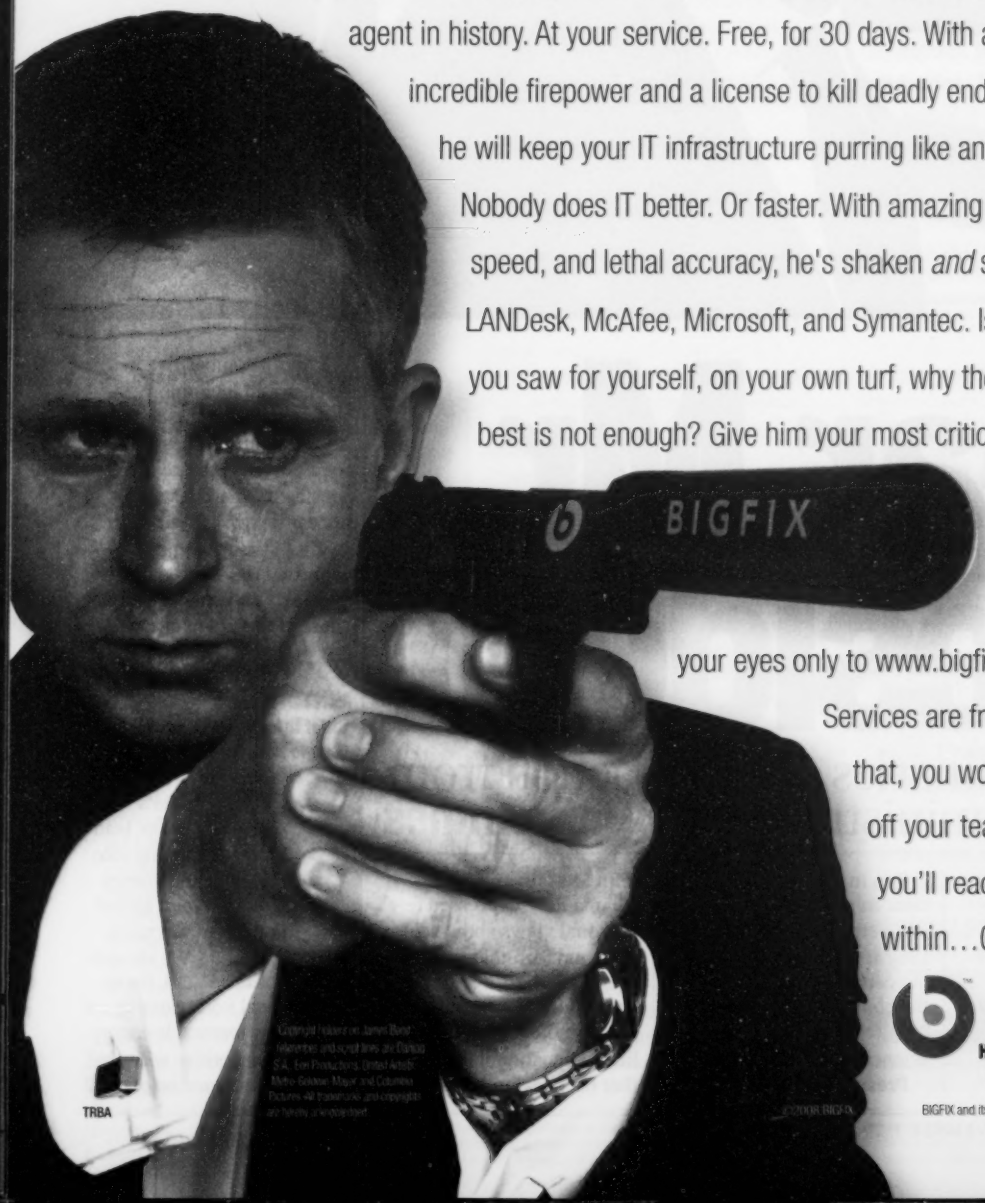

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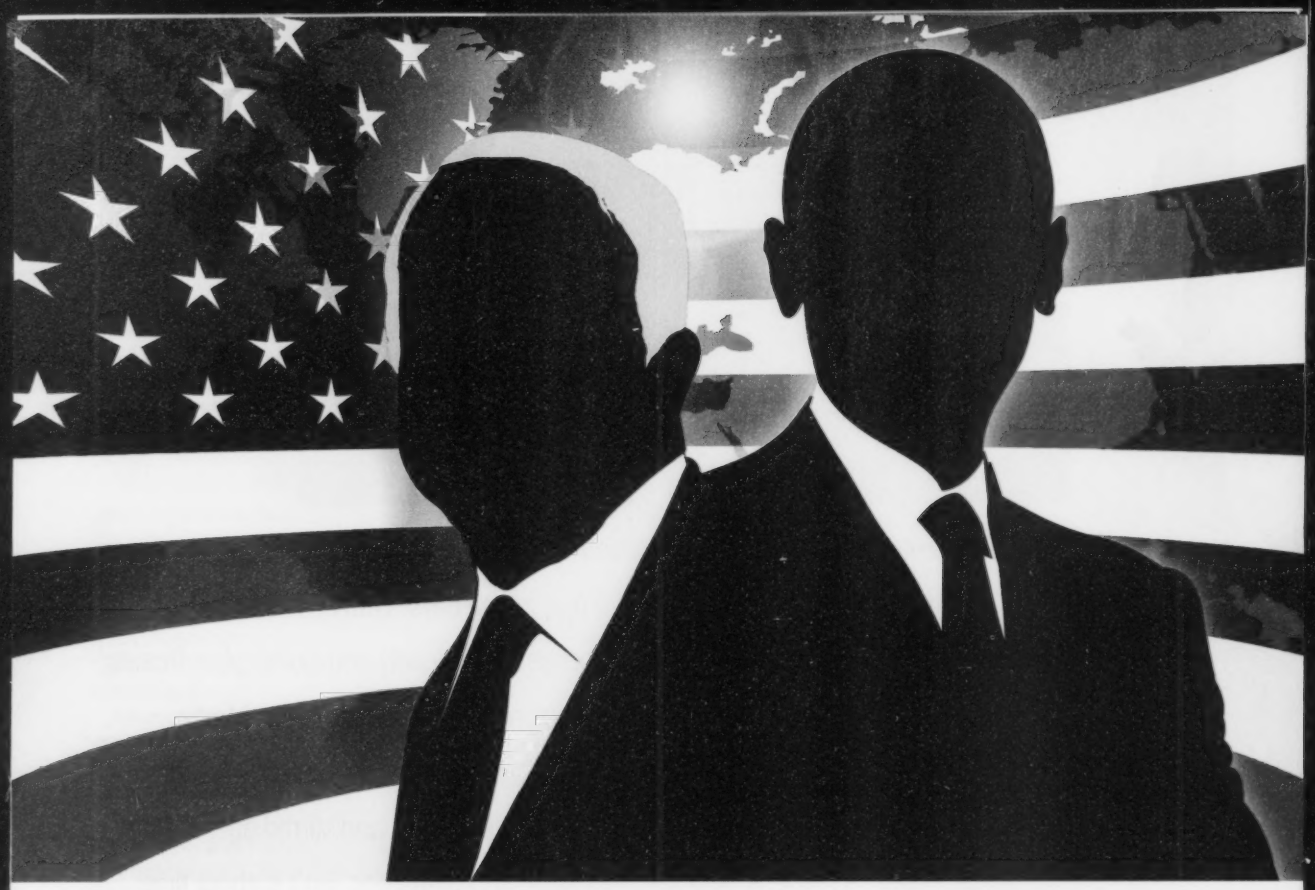

Dear Mr. President

Top IT luminaries demand action from the next administration. **By Gary Anthes**

THE CURRENT economic turmoil obscures a long-term problem that may shape the future of America long after the present crisis is over.

By most measures, the U.S. is in a decade-long decline in global technological competitiveness. The reasons are many and complex, but central among them is the country's retreat from long-term basic research in science and technology.

Presidential candidates John McCain and Barack Obama have expressed few personal views about science and technology, but they have outlined some broad policy proposals and goals, and both have outlined educational reforms that they say will make the U.S. more competitive in science and technology.

Computerworld asked nine high-tech luminaries to offer their advice to the next U.S. president. Their answers appear below, in their own words. These comments represent the views of the individuals and not necessarily those of their employers.

VINTON CERF

Chief Internet evangelist, Google Inc.; Internet pioneer

TIMOTHY ARCHIBALD

We must take a global leadership role on energy and global warming. We should:

1. Focus our national R&D capacity on developing renewable energy at costs competitive with coal.

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Advertisement

Don't Let the Economic Crisis Become an IT Crisis

Keeping systems up and running through tough financial times

It's a time of dire predictions, gloomy forecasts and slashed budgets. But because companies must survive, it's also a time of doing everything possible to patch systems together and keep them running. System demand has never been higher, and because of the financial crunch, so has the necessity to "make do with what you've got." Those new servers will have to wait until next quarter. Those old workstations are going to have to hold up. Software upgrades, unless already covered, will also have to wait. It's a true test of an IT crew, kind of like a battleship's crew in combat.

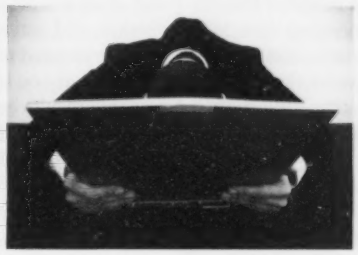
Your company is heavily dependent on the performance you provide them. Any system downtime for any reason means lost time and profit. The same can be said for slow performance—the longer it takes to get something done, the longer a customer has to wait, the more possibility of being cut off by the competition or angering a customer so they go someplace else.

Fragmentation Robs Production and Performance

File fragmentation is a key factor that cripples system performance and threatens reliability all across the enterprise. It causes system slowdowns resulting in lost production and help desk calls. It also allows for hard drive lives that can be shortened by 50 percent, due to the excessive I/O activity to retrieve fragmented files.

"We constantly had servers running slowly and getting really fragmented from constant file access," said Jim Bernal, Senior Network Engineer with Howe, Barnes, Hoefer & Arnett in Chicago, Illinois. "Over time file access would almost halt or take minutes to access a file. We also had problems with users logging in with domain controllers sometimes rejecting users because of timeouts in communicating with our DNS servers."

Scheduled defragmentation—including the "free" offering—doesn't actually solve the problem. Time windows in which to schedule defrag have become less and less, thanks to escalating 24X7 server operation at many companies. In between the scheduled



runs that do occur, fragmentation continues to build and impact performance. And scheduled defrag also causes its own cost overrun: the valuable IT time required to analyze and schedule defragmentation for each drive.

The Small Investment with Huge ROI

The one investment that pays for itself many times over in restored performance and hardware life is Diskeeper with InvisiTasking. Once installed, Diskeeper invisibly and automatically maintains performance from that day forward. Performance is consistently maximized, there is never a negative performance hit from defrag, and scheduling is never required.

"Since implementing Diskeeper on our servers and workstations, we've improved system performance tenfold," said Mike Ciccarone, IT Coordinator with Town of Fountain Hills, Fountain Hills, Arizona. "The automatic defragmentation jobs not only improve system efficiency but the effectiveness of our limited Information Technology staff. We now have time to perform other necessary tasks to help support our users and to roll out new services."

"With Diskeeper, our servers have been up almost 99% of the time with no downtime, except to install updates from Microsoft or when a server reboot was necessary," said Bernal. "And file access is lightning fast."

Keeping Economic Troubles Out of IT

Don't let the economic crisis become an IT crisis. Put Diskeeper® 2008 with InvisiTasking® technology to work in your company—and put performance and reliability problems behind you.

"With fragmentation exerting such a severe toll on system performance, it's quite likely that many organizations have initiated hardware upgrades unnecessarily. By using an enterprise defragmentation utility, it is possible to achieve performance gains that meet or exceed many hardware upgrades. From a cost standpoint alone, this is an attractive proposition."

IDC WHITE PAPER,
REDUCING DOWNTIME AND REACTIVE MAINTENANCE: THE ROI OF DEFRAGMENTING THE WINDOWS ENTERPRISE

"I think you can do the math on how much we saved on not having to buy new machines, not to mention the manpower I did not have to use constantly working on the machines," said Derik A. Hammond, IT Operations Supervisor with L-3 Photonics in Carlsbad, California. "The savings to the programs and my stress level cannot be measured. It even looks like some of the machines will actually get close to a four year life span due to Diskeeper."

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2. Continue work on clean coal and restart nuclear power development.

3. Begin a major campaign for reduction in fossil fuel consumption: 100 mpg hybrids and all-electric transportation.

4. Charge DARPA with development of new, lightweight, strong materials for automobile, aircraft and spacecraft bodies.

5. Initiate a crash program to analyze the effects of global warming on coastal regions and prepare responses.

6. Increase funding for weather data collection, analysis and prediction to cope with effects of global warming.

7. Develop a new K-12 educational program for science, technology, engineering and mathematics.

8. Make permanent the R&D tax credit, and initiate a credit for use of renewable energy.

9. Strengthen the SEC and revisit banking regulations to prevent a repeat of the subprime mortgage and derivative security disaster.

10. Prepare for the massive wave of retiring baby boomers in the decade ahead.

HENRY CHESBROUGH

Adjunct professor and executive director, Center for Open Innovation, Haas School of Business, University of California, Berkeley

Innovation must be at the forefront of economic policies in [the new] administration. Innovation is widely distributed around the world, so policies must promote the division of innovation labor. These include support for start-ups and small businesses. Universities and national labs must be allowed to engage with industry on translating research results into commercial products. Markets for the sale and resale of intellectual property must be supported. Open initiatives must be promoted, especially where government can help set industry standards.

More money must be appropriated for basic research. Ph.D. graduates should receive green cards to allow them to stay in the U.S. H-1B visas should be expanded. The R&D tax credit should be made permanent. And a new initiative in alternative energy led by the government — but involving universities, industry, venture capitalists, nonprofits and research labs — should be started immediately.

JUDY ESTRIN

CEO, JLabs LLC; author of *Closing the Innovation Gap*

BILL REITZEL

The nation faces major challenges — energy independence and climate change, national security, and the need for affordable, quality health care — that threaten our future. Each of these challenges also brings opportunities, if we give innovation the attention it deserves.

One of the most crucial roles of the next administration will be to foster the

The terra firma for IT vertigo.

right environment for innovation through wise funding and smart policy. But it must also re-energize the nation by embracing these challenges, providing a vision to inspire and engage the country at large, and bring out the innovator in each of us.

DAVID FARBER

Professor of computer science, Carnegie Mellon University; former chief technologist, FCC

I propose that a new president re-establish the President's Information Technology Advisory Committee. This, combined with a strong science/technology adviser to the president, would provide the White House with much-needed help in technology policy.

There are agencies that regulate aspects of IT, such as the Federal Communications Commission. Re-establishing the position of chief technologist as a permanent position [and establishing] a bureau that would attract technologists to join the agency would bring to the policymaking activities technical input and understanding missing these past years.

The establishment of an organization that has the staff and charter to advise the Congress can be critical in the formulation of realistic laws that impact IT. Such capability is missing now, and our laws show it.

Finally, it is essential to get our brightest young scientists and technologists to intern in Washington. The benefits to the nation and to the young future leaders will be enormous and long-lasting.

ROBERT KAHN

CEO of the Corporation for National Research Initiatives; Internet pioneer and former DARPA program manager

National security and economic growth are closely coupled, and our engine of economic growth depends on an educated workforce and advances in technology.

Many of the greatest challenges we face in our cities, and with our globally interconnected world, are increasingly dependent on engineering talent that knows how to apply science and technology to solving real problems. In difficult times, when multiple near-term priorities draw heavily on limited resources, it is all too easy to curtail research investments and associated technology development. This would likely shortchange our future generations. The next president should firmly resist that possibility.

LEONARD KLEINROCK

Professor of computer science, University of California, Los Angeles; Internet pioneer

When it comes to science and technology, we still enjoy a leadership position. But we are in se-

All those competing information requests can make you dizzy.

The CEO needs to know P&L performance by business unit. The CFO needs to know he's meeting compliance regulations. And a dozen business managers need to know how to increase output but not staff.

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Where the Candidates Stand

Sen. Barack Obama says he'll "change the posture of our federal government from being one of the most anti-science administrations in American history to one that embraces science and technology."

He has promised to double federal funding of basic research over 10 years, to appoint the nation's first chief technology officer, to make the R&D tax credit for corporations permanent and to "restore the basic principle that government decisions should be based on the best-available, scientifically valid evidence and not on the ideological predispositions of agency officials or political appointees."

Sen. John McCain has not said directly what he might do about the level of federal spending on research, but he has said he favors technology-friendly policies aimed at the private sector through "broad pools of capital, low taxes and incentives for research in America . . . and streamlining burdensome regulations."

McCain has said that he'd make the R&D tax credit permanent and set it equal to 10% of the wages a company pays its R&D workers, and that he'd allow companies to write off the cost of new technology and equipment in the first year.

– GARY ANTHES

rious danger of losing that position due to the shortsighted view of some of our key government funding agencies.

What used to be their willingness to support long-term, high-risk, high-payoff, well-funded and visionary research has been replaced with a focus on short-term, low-risk, low-payoff, poorly funded and pragmatic objectives. This is not only damaging our ability to win in today's competitive environment, but it is also channeling the next generation of faculty and senior researchers into small science, incremental thinking and short-term goals.

I urge the next president to return to the generous government funding of long-term advanced and innovative research projects for our universities and research centers.

RICK RASHID

Senior vice president, Microsoft Research; former professor of computer science, Carnegie Mellon University

Increasing use of noncompetitive earmarked funding; short-term, mission-focused investment; and insufficient funding for long-term and risk-taking research threaten America's economic future and position in the world.

My advice to a new administration is to work toward restoring a balanced system of support for long-term basic research in science and technology.

Specifically, I would recommend that it work with Congress to eliminate or limit earmark funding for science, restore the "long-term risk-taking" parts of DARPA to its 1970s/1980s form, and fund the American Competitiveness Initiative.

ED LAZOWSKA

Professor of computer science and engineering, University of Washington, Seattle; former chairman of the President's IT Advisory Committee

1. Restore integrity to U.S. science policy. It is essential that federal policy benefit from the most complete, accurate and honest scientific and technological information available. The current administration has stacked scientific advisory boards, suppressed research that conflicts with its political agenda, prevented government scientists from speaking openly with the public and the media, failed to utilize the best available evidence to guide policy, and generally denigrated science, evidence and objectivity.

2. Double, over a 10-year period, the federal investment in fundamental research by key science agencies. Essentially every aspect of IT upon which we rely today traces its roots to federally sponsored research. The current administration has decreased federal support for fundamental research in all fields.

3. Make a national commitment to science education at all levels — K-12, undergraduate, graduate and retraining. Nothing is more important than the education of the next generation. America is losing ground.

4. Make the R&D tax credit permanent.

5. Use technology to address these "grand challenges" of the 21st century: achieving energy independence; addressing climate change; feeding the people of America and the world; enhancing national security; further improving human health, life expectancy and quality of life; restoring and improving our urban infrastructure; protecting our environment. Each is critical; none is optional. Each requires major new advances in science and technology.

VICTOR ZUE

Director of the MIT Computer Science and Artificial Intelligence Laboratory; adviser to the U.S. Department of Defense and the National Science Foundation

At a time of worldwide economic, geopolitical and social challenges, the next president must ensure our continuing preeminence in IT and computer science. Historically, revolutionary achievements — the Internet, mobile communication, parallel computing, graphical user interfaces — typically originated from university research and often took more than a decade to realize a $1 billion market.

Therefore, the administration must significantly increase its budget for long-term, fundamental research, e.g., by doubling the NSF budget annually for the next four years. We must invest in educating the next generation of IT and computer science professionals. This will require introducing courses in high school and ensuring that those who would like to enter the field can afford it. ■

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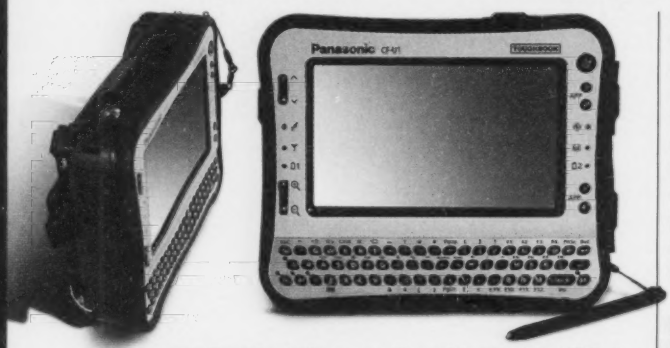
Mobile Workforce 2.0

Rugged ultramobile PCs bring more features and better connections. By Matt Hamblen



The Panasonic Toughbook U1 comes with a solid-state drive, 1GB of memory and the Intel Atom Processor Z520. It's rated to survive a four-foot drop and has a sealed, all-weather design. It also features integrated Wi-Fi, a backlit QWERTY keyboard, USB and SD card slots, and a 5.6-in. WSVGA sunlight-viewable touch screen.

FOR YEARS, businesses have been deploying mobile software to help workers communicate wirelessly with back-office applications while on field service calls or sales visits.

Now, wireless mobility is entering a new era with more capabilities. For example, GPS-enabled devices have been made more powerful with richer middleware and synchronization software.

At air conditioning giant Carrier Corp. in Farmington, Conn., about 1,600 service technicians throughout North America have been equipped with wireless handhelds for several years. The technicians receive dispatch data for service calls and notify dispatchers when they have finished a job.

But Michael Hawman has bigger plans. "Now, we want to move to the second generation," says Hawman, CIO of building systems and services at Carrier.

He wants newer devices that can capture data on a technician's work, including readings from heating and air conditioning units and the models and serial numbers of new parts installed.

Hawman would also like customer signatures to be captured electronically and transmitted to a back-office application. And with GPS capabilities in more devices, Carrier may soon be able to track technicians from the handhelds they carry rather than from separate devices on their trucks, he says.

Those are just a few of the advanced capabilities of new rugged handheld devices and second-generation technology such as ultramobile PCs, which Carrier has been testing. The company is currently giving the Panasonic Toughbook U1 UMPC a trial run. Previously, Carrier tried and rejected the iPhone because the company found that it wasn't rugged enough for its service technicians, Hawman says.

HARDWARE AND SOFTWARE

Second-generation capabilities are enhanced by more sophisticated software and newer hardware, Hawman notes. For example, a software-as-a-service (SaaS) contract with Antenna Software Inc. will link back-office applications for accounting and inventory and provide GPS as well.

Antenna's service is especially valuable to Carrier because it provides tools that link to a number of Carrier's applications as well as to more standard Web applications. The company won't say exactly how much it's spending on Antenna's services or on hardware, but Hawman notes that Carrier has invested millions of dollars in its mobile strategy and as a result has seen a large increase in productivity.

"Our mobility strategy is a key strategy for us as we improve the customer experience," he says.

Antenna recently announced several improvements to its Antenna Mobility Platform with the release of AMP 2.0. They include the ability to quickly configure mobile connections to back-office applications and GPS, as well as a new mobile instant messaging application, according to Antenna.

Other improvements include AMP Studio 4.0 for building applications with components, AMP Component Library, AMP DocShare and support for the iPhone, says Antenna CEO Jim Hemmer. In all, Antenna can connect mobile workers with about 50 back-end systems, including Oracle databases and SAP software.

Hemmer says about 80% of Antenna's 125 customers use the SaaS model; the rest use Antenna tools in-house.

Many companies offer products and services to connect field workers to central offices wirelessly, and analysts say the benefits are real. But Gartner Inc. analyst Ken Dulaney said in a March research note that large firms still need to apply more strategic planning around mobile technology deployments. ■

Mobile Management

TeleNav Inc. in Sunnyvale, Calif., offers a number of GPS navigation services for individuals' mobile phones. The company recently launched a GPS-enabled mobile resource management service to provide real-time information for managing field operations and remote communications. It allows a team of field workers to clock in and out as a workgroup over wireless BlackBerries or other devices. Signature and image capture and other functions have also been added, TeleNav says. Pricing wasn't disclosed.

– MATT HAMBLEN

Where is the keyboard? Don't all BlackBerrys have keyboards? This just has a screen that— oh sweet sassafras, did it just click? It clicked right where I wanted it to. Is that supposed to happen? And is it supposed to feel so good?

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Getting It All 'Virtually' Right

IT's implementation of **virtualization** was **flawed,** but the worst problems can be **remediated.**

THE RESULTS from our server virtualization assessment are back, and we failed miserably. There were a few bright spots, but mostly our implementation was found wanting. Fortunately, our mistakes can be remediated.

The report included more than a dozen findings, but I'll discuss only the most significant ones.

As I reported earlier, IT deployed a fairly significant VMware ESX implementation without telling me. When I found out, I called in a consultant to conduct an assessment.

His first finding concerned the VMware service consoles, which start up and administer the virtual machines associated with a single ESX server. Our engineers placed the IP addresses for the consoles on the same network used by the VMs. That's not good, since the consoles are the single point from which servers can be started and administered.

Worse, administrators were sharing a single administrative account for the consoles. They should have known better, and I told them as much when I instructed them to create individual accounts.

I also had our network team create a new virtual LAN, and we created new IP addresses for the service consoles. Then we devised some firewall rules to control access.

Our next concern was VirtualCenter, which centrally manages all of the ESX servers. It allows administration of all the virtual servers from a single interface. The potential damage that a hacker could inflict if he had control of the VirtualCenter server is frightening to think of, but even more frightening is that it was not properly patched.

What's more, it was sitting on a VLAN along with some arbitrary servers, and there were insufficient controls for delineating administrative duties between the help desk, which we outsource to India, and our Level 3 engineers at corporate headquarters in the U.S.

■ The sysadmins should have known better, and I told them as much.

Another change of IP address was called for, and we placed the server on a different management VLAN, with the appropriate firewall rules to limit access. I also had the team update patches and create a process to ensure that the server would be patched on a more regular basis than other servers.

Less-critical findings included recommendations that we create warning banners, disable root access via Secure Shell (SSH) and use sudo for controlled administrative access.

In addition, the team will need to properly configure syslogd to send system logs to our syslog server; disable SSH Version 1, which is plagued with vulnerabilities; minimize the number of unneeded services running on the ESX server, which is really just a stripped-down version of Red Hat Linux; and make some modifications to the kernel to prevent denial-of-service attacks.

As for the assessment's positive findings, we didn't make the same storage mistakes a lot of companies do when implementing virtualization. The configuration of our storage network received a stellar report, which noted that we had implemented the proper LUN (logical unit number) zoning and masking to limit the storage that each virtual server can access.

We also got high marks for deploying Tripwire to monitor key configuration files to detect suspicious activity and ensure that the configuration of our ESX servers is in line with our policies.

Finally, the VMotion network, which coordinates the automatic moving of virtual servers from one ESX host to another if one fails, was properly placed on a separate VLAN.

Our remediation plan is continuing, and I'll be making sure that it's completed in a timely manner. ■

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussions in our security blogs:* computerworld.com/blogs/security.

Trouble Ticket

ISSUE: An outside assessment of a VMware implementation finds faults aplenty.

ACTION PLAN: Define fixes, and make sure they're carried out.

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Paul Glen

Beware Delusions in Good Times and Bad

WITH GLOOM DESCENDING on the global economy, it seems clear that we in IT will not be spared from the suffering of the financial meltdown. If history is any guide, we'll be in the vanguard of corporate cuts. When things get tough, businesses rarely invest in efficiency, expansion or strategic change. Instead, they cut contractors, projects and employees willy-nilly to husband cash and shore up short-term balance sheets.

While these times can be disturbing and scary, they also offer a good opportunity for reflection, and a chance to review our assumptions about our world, our work and how they all fit together. So while the storm is howling outside, maybe we should take a pipe cleaner to our brains.

Good times may lead us to some delusional thinking that leaves us vulnerable to mental and financial pain when the party's over. The first fallacy that many of us buy into during good times is that we're all geniuses. We become convinced that because things are going well, we actually know what we're doing. The world looks great, so we must be smart, right? And if we're intelligent and effective, then we deserve credit for all the success. We are masters of the universe. We are the Promethean creators of technology, which begets value and wealth. If the stock of our company goes up, it must be the result of our beneficial actions.

And during good times, this is all fine. But it is delusional.

As soon as things begin to go badly, we're not as eager to accept the blame as we were to take the credit. We look for extenuating circumstances, constraints beyond our control, systemic failures or any other excuses that might shield us from the harsh judgment of reality.

The truth is that none of us is in complete control of either our successes or our failures. We live in an interdependent world and work in interdependent offices. Few of us are either geniuses or idiots. Most of us are ordinary mortals trying to do our best in the organizations in which we've landed. Likewise, stock prices are not the omniscient wisdom of the universe expressed in numeric form. They are the result of the machinations of millions of global gamblers.

■ While the storm is howling outside, maybe we should take a pipe cleaner to our brains.

The problem with believing in our own power is that when it's revealed to be an illusion, we suffer shame and humiliation. Worse, we can succumb to the opposite delusion: that we are completely powerless.

While the first myth leads to mental anguish, the second can lead to financial ruin. When our salaries go up, we tend to believe that personal income is a function of our value to the company. We believe that our incomes are somehow a measure of our moral or financial virtue. And then we build a lifestyle that assumes that our virtue will never fail us. We take out mortgages, grow accustomed to luxuries. We think our companies pay us more because we're loved and respected.

Of course, there's nothing wrong with being loved and respected. And having a reasonable degree of self esteem is no vice. But to believe that money is an accurate measure of one's value is a dangerous idea. We live in a market economy, and what we're paid is largely the result of supply, demand and regulation.

If in this downturn many of us are forced out of good-paying jobs and into jobs that pay less, does that mean that we're personal failures? Or does it just mean that the forces of supply and demand for our labors have changed? How many of us are now hostage to mortgage debt, car loans and credit cards that we took on in the belief that incomes and value would only rise?

Through the ups and downs of a career, it's best to stay firmly in touch with hard reality, even if it means giving up some of our pleasant illusions conjured during times of good fortune. ■

Paul Glen *is the founder of the GeekLeaders.com Web community and author of the award-winning book* Leading Geeks: How to Manage and Lead People Who Deliver Technology *(Jossey-Bass, 2003). Contact him at info@paulglen.com.*

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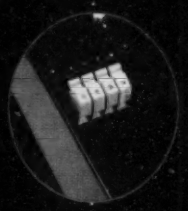

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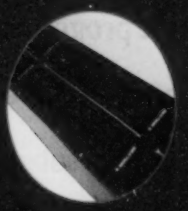

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TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Bin There, Done That

It's a few years before the creation of eBay, and this IT shop is upgrading one of its oldest machines with external tape drives. "In order to do this, we had to obtain a certain type of SCSI card that had stopped being made many years ago," says a pilot fish on the scene. "Our supplier managed to get the cards for $35,000 in the back of a warehouse in Sweden, and they were the last of their type available. My colleague took delivery of them, and as his desk was a mess, he put them by the side of his desk." But next morning, the interface cards are gone. A quick search doesn't turn them up, but someone mentions seeing a janitor headed to the trash bin with two boxes. The good news: The bin hasn't been emptied. The bad news: The bin contains the garbage from a restaurant in the same building, so it's a little smelly. "Nobody wanted to explain to the boss what had happened and ask for another $35,000," fish says. "My colleague was given a hard hat, some gloves and a flashlight, and he was lifted into the bin while I stood guard to ensure that the garbage truck did not stop by to empty the bin. After 45 minutes, he managed to retrieve the cards. For the rest of the day, nobody sat near him. He never left things on the floor next to his desk again."

It's About Time

It's been two years, but some of the machines in this IT shop still haven't been adjusted to use the new daylight-saving time rules. "Management cannot justify the cost of replacing or upgrading them," grumbles a sysadmin pilot fish responsible for the servers. "So we slog on with three weeks in the spring and one in the fall where some of the systems report the wrong time." And because it's that time of year, users complain to fish about several annoying time-stamp discrepancies – but as fish keeps explaining, this will only continue for a week, until the time change. Thus it is that the boss complains at a staff meeting that the time stamp on a file is an hour off. Boss: "Why is this happening?" Fish explains for the 24th time. Boss: "I need you to fix this problem immediately. When will you be done?" Fish: Monday. Boss: "OK. Next on the agenda . . ."

Color-Coded

This pilot fish works on the help desk of a local hospital that offers network connections so patients and their families can connect to the Internet. "A nurse calls the help desk to say that she needs an Internet cable," fish reports. "I grab a handful of cables of different sizes and head up there. When the nurse looks at the cables, she says, 'Oh – I have several cables like that already. But I thought only the purple ones worked, so I wanted you to bring some purple cables.' "

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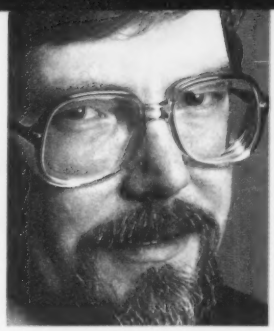
■ FRANKLY SPEAKING

Frank Hayes

What to Do



YOUR BUDGET is about to be cut. Your IT shop faces a hiring freeze or layoffs. You can see a pep talk about "doing more with less" heading your way like an 18-wheeler barreling down a one-lane road. And you have no idea when things will start to get better. Does that about cover your situation?

Stop. Catch your breath. And get ready for the deluge.

You already know your IT shop needs to become more visible to the rest of the business. You know you'll have to work faster and be a closer and more valued partner than ever to your users.

What else should be on your to-do list — and the to-do lists of each person in your IT shop?

Glad you asked.

Dive into a new technology. Cloud computing is hot this week. So is virtualization. Linux, agile programming, encryption — face it, there are lots of technologies you don't know. Choose one and jump in. It doesn't have to be something job-related, just something to stretch your brain. Remind yourself of why you got into this game in the first place. It may be a while before you have time for much variety again.

Find a corner you can cut. Look for efficiencies. Rethink your procedures. Streamline your habits. Remember, you're about to have less time to do more work. Either you find ways to work faster, or your days will get longer.

Choose an escape valve. You know you'll need one or your head will explode sometime before June. Maybe it's a game, a blog, a hobby, a meditation position. Whatever it is, have it ready so that when you *just can't take it anymore*, you'll be able to spend a few minutes escaping — and then go back to taking it.

Identify a need. What's not being done that would help users or IT? What's the cheapest way to make that happen? Is there any way to measure the benefit? And how many people will want to, um, help take credit?

Spot a way to save money. It doesn't have to be big or ongoing, though that's a nice plus. But anything that will consume less manpower, attention, electricity, cooling or maintenance without reducing what IT delivers to users — that's likely to be well received.

Bury a hatchet. Maybe it's a user you can't stand. Or a peer who nurses an old grudge. Now's the time to clear the decks with an enemy. You don't want the distraction of a needle match when the going gets tough. And if you can't actually resolve the problem, maybe you can cut a deal: For six months, you'll both pretend it's in the past. You can always go back to hating each other when happy days are back again.

■ Dive into a new technology. Choose an escape valve. Bury a hatchet. Cross a discipline. And stop to smell some roses.

Inventory your skills. If your current job suddenly becomes obsolete in an IT shop reorganization, you'll want to know in advance what you're good at. Don't just refresh your résumé — think about *all* of the things you can do. That's your guide to what you may be doing next.

Cross a discipline. A smaller staff means each staffer may have to do more things. If you're working in a silo, it's about to be demolished. Look around. What's the logical line for you to cross? And when the time comes, how will you cross it?

Learn something new about your business. Not IT — the business your company is in. The more you know about how its products and services are conceived, engineered, produced, marketed, sold, accounted for and regulated, the more you can contribute to making the business work better with technology.

Stop to smell some roses. It really is going to get ugly. You'll have less time for the people, places and things you love. Don't wait. Enjoy them today. ■

Frank Hayes *is* Computerworld's *senior news columnist. Contact him at frank_hayes@computerworld.com.*

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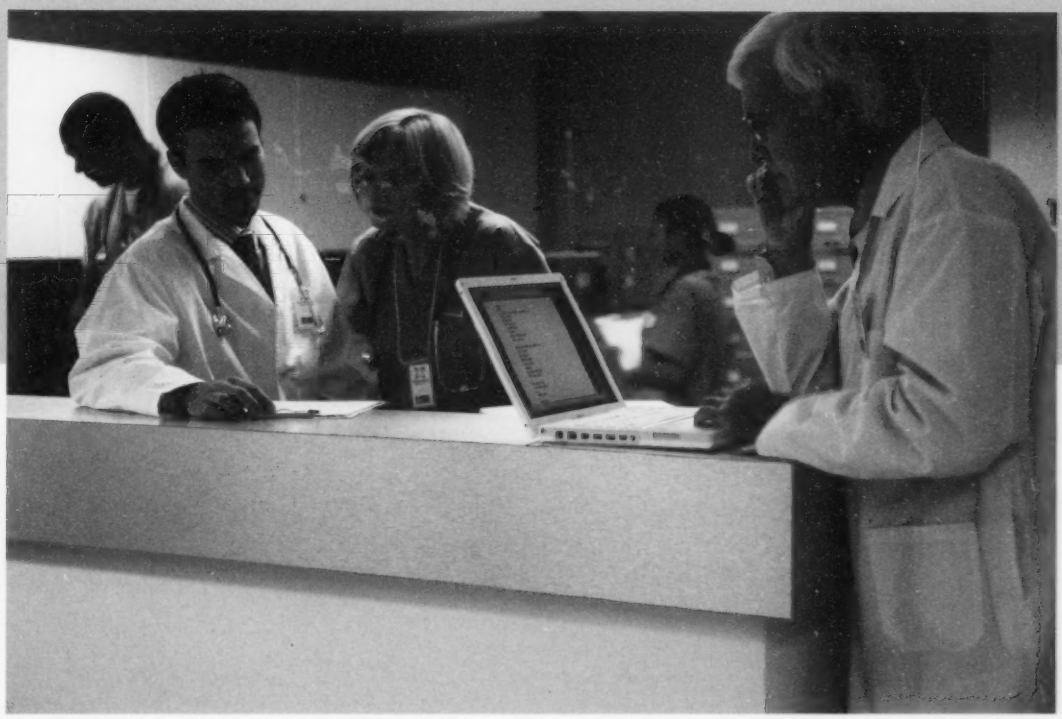

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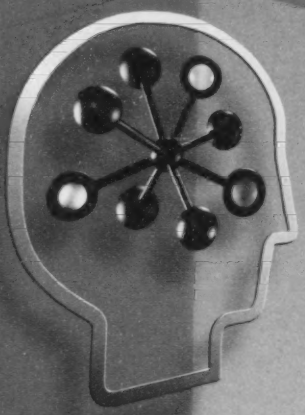

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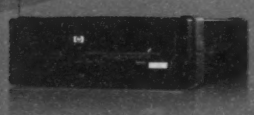

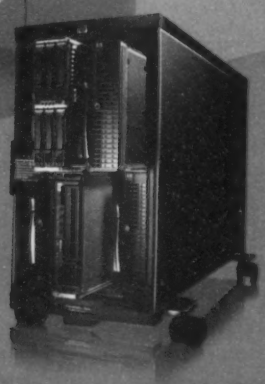

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